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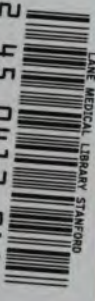
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Treasury Department.

Marine-Hospital Service.

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Report

U. S.

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STATES

1894

(Seal on side)

GOVERNMENT PRINTING OFFICE.

1895.

**TREASURY DEPARTMENT.**  
**Document No. 1794.**  
*Office of U. S. Marine-Hospital Service.*

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• OPERATIONS

OF THE

UNITED STATES MARINE-HOSPITAL SERVICE.

1894.

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## REPORT TO THE SECRETARY.

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TREASURY DEPARTMENT,  
OFFICE SUPERVISING SURGEON-GENERAL, M. H. S.,  
November 30, 1894.

HON. J. G. CARLISLE,  
*Secretary of the Treasury.*

SIR: I have the honor to submit herein the report of the Marine-Hospital Service of the United States for the fiscal year ended June 30, 1894, this being the ninety-sixth year of the Service and its twenty-third annual report.

The statistical portion of the report terminates with the fiscal year. Pertinent information concerning the transactions of the Service to present date is included.

### MEDICAL CORPS OF THE MARINE-HOSPITAL SERVICE.

During the fiscal year but one board was convened for the examination of applicants for admission into the medical corps. The number of applications for permission to appear before this board was 40. Twenty-seven presented themselves, four of whom passed successful examinations.

### APPOINTMENTS AND PROMOTIONS.

Three successful candidates were appointed to the grade of assistant surgeon, and two assistant surgeons were promoted, after examination, to the grade of passed assistant surgeon.

### CASUALTIES.

No deaths not previously reported have occurred, but it has been necessary to place upon waiting orders two assistant surgeons and one passed assistant surgeon, all of whom have been incapacitated by reason of tuberculosis. It is certain that two of these officers contracted this disease in the performance of their duties. One of these officers was first given a limited leave of absence and afterwards placed upon waiting orders. After residence in a locality most favorable to his recovery, namely, Asheville, N. C., he reported himself as again fit for duty, and April 26, 1894, was ordered to San Diego, Cal., to assume charge of the Marine-Hospital Service at that port. By reason of the healthful influence of this location his permanent recovery is expected.

**MEASURE FOR THE RELIEF OF THE LEGAL REPRESENTATIVES OF  
ASST. SURG. JOHN W. BRANHAM.**

The facts concerning the death of Asst. Surg. John W. Branham from yellow fever, August 20, 1893, have been set forth in detail in the previous annual report. Dr. Branham left a wife and one child, with no provision for their support. A bill was introduced in Congress making provision for the legal representatives of this officer by the payment of a sum equivalent to his salary and allowances for two years, the reasons for passing this bill being considered equivalent to those which prompted the passage of the act of Congress of May 4, 1882, in behalf of the Life-Saving Service. The following is a copy of the bill introduced and the letter commenting thereon written at the request of the chairman of the Committee on Claims, House of Representatives, together with the report of said committee. It is hoped that Congress will take favorable action upon this bill.

**COPY OF BILL INTRODUCED BY MR. RAYNER FOR THE RELIEF OF REPRESENTATIVES  
OF JOHN W. BRANHAM.**

Whereas John W. Branham, lately an assistant surgeon in the United States Marine-Hospital Service, contracted yellow fever while performing his duty as assistant surgeon in an infected city, and having died of yellow fever at his post of duty on the twentieth day of August, eighteen hundred and ninety-three: Therefore,

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That the Secretary of the Treasury be, and he is hereby, authorized and directed to pay, out of any money not otherwise appropriated, to the legal representatives of John W. Branham, the sum of four thousand one hundred and sixty dollars, being the amount of his salary and allowances for two years.

**LETTER TO THE CHAIRMAN OF THE COMMITTEE ON CLAIMS OF THE HOUSE OF  
REPRESENTATIVES.**

TREASURY DEPARTMENT,  
OFFICE OF THE SUPERVISING SURGEON-GENERAL, M. H. S.,  
*Washington, D. C., February 20, 1894.*

Hon. BENJAMIN H. BUNN, M. C.,

*Chairman Committee on Claims, House of Representatives.*

SIR: I beg leave to invite your attention to the inclosed bill (H. R. No. 3317), introduced by Mr. Rayner, entitled "A bill for the relief of representatives of John W. Branham," who was at the time of his death an assistant surgeon of the Marine-Hospital Service.

Dr. Branham was on duty at the port of New York at the time it became necessary for this Service to assume control of the quarantine at Brunswick, Ga. The following is a copy of a telegram containing his first order for this particular service:

"WASHINGTON, D. C., July 20, 1893.

"Assistant Surgeon BRANHAM,

*"Marine Hospital, Stapleton, New York:*

*"(Through medical officer in command.)*

*"Report at Bureau without delay, en route to Brunswick, Ga., to take charge of quarantine station.*

*"WYMAN, Surgeon-General."*

Subsequently the following order was issued:

"JULY 22, 1893.

"Asst. Surg. JOHN W. BRANHAM,

"*United States Marine-Hospital Service, Washington, D. C.*

"SIR: Having arrived in Washington in accordance with telegraphic instructions, you are ordered to proceed to Brunswick, Ga., by way of Norfolk, Va., awaiting telegraphic orders from the Bureau at Norfolk, giving the time when you shall proceed. While there you will consult with Surgeon Carter with regard to the necessary details to be observed in assuming charge of the quarantine at Brunswick, Ga. Your formal orders to assume this charge, it is presumed, will be sent you by telegram on the 24th.

"WALTER WYMAN,

"*Supervising Surgeon-General.*"

On July 25 the following telegram was sent:

"WASHINGTON, July 25, 1893.

"Asst. Surg. J. W. BRANHAM,

"*Marine-Hospital Office, Norfolk, Va.*

"Proceed immediately to Brunswick, Ga. Instructions will be sent you care collector at that place.

"WYMAN, Surgeon-General."

Final instructions were sent to him as follows:

"WASHINGTON, D. C., July 25, 1893.

"Asst. Surg. JOHN W. BRANHAM,

"(*Care collector of customs*) *Brunswick, Ga.*

"SIR: Confirming telegram sent to you this date at Norfolk, directing you to proceed immediately to Brunswick, Ga., you are hereby informed that owing to the failure of the Brunswick health authorities to enforce the quarantine regulations promulgated by the Secretary of the Treasury, you have been detailed by the President of the United States, under section 3, national quarantine act, approved February 15, 1893, to execute the said regulations at said port.

"You are hereby directed to inspect all vessels from foreign ports prior to their entry at the port of Brunswick and all vessels having had sickness on board during the voyage, and furnish the captain with a certificate of inspection of the vessel as required under section 5 of the national quarantine act. You are informed that the collector of customs at the port of Brunswick will be directed by the Secretary of the Treasury to refuse entry to any vessel from any foreign port or to any vessel having had sickness on board during the voyage unless the master has been furnished with a certificate of pratique by yourself.

"Surg. H. R. Carter has been ordered to Brunswick as inspector, and you are directed to consult with him as to the proper measures to be adopted in carrying into effect the instructions contained in this letter. You will inform the health authorities at the port of Brunswick of your orders from this office, and report immediately the details of any action taken by yourself under these instructions, and make such recommendations as may be necessary to carry them into effect.

\* \* \* \* \*

"WALTER WYMAN,

"*Supervising Surgeon-General Marine-Hospital Service.*"

In accordance with the above instructions Assistant Surgeon Branham assumed charge of the Brunswick quarantine July 28, 1893. I will say here that he was chosen for this particular duty by reason of the fact that he was a native of Georgia, and therefore less likely to encounter the local prejudice which might be excited by the Government's assuming charge of this quarantine. A more important reason, however, was the fact that he had had previous quarantine experience, was a man of

very unusual mental endowment, and with a marked stability of character and sound judgment, which made him particularly fitted for the trying position in which he was to be placed.

Dr. Branham, as stated, assumed charge of the Brunswick quarantine on July 28, 1893; on August 10, 1893, his illness was reported to the Bureau, and on August 20, 1893, he died of yellow fever while attended by two regular officers of the Marine-Hospital Service. He leaves a wife and an infant child.

The relief requested by this bill finds a precedent in the act of Congress, May 4, 1882, which grants to the families of keepers and surfmen in the Life-Saving Service an amount equal to two years' pay of said keeper or surfman in the event of death in the line of duty.

I earnestly urge the passage of this bill, leaving it to others to give expression to the implied obligations upon the Government to relieve the wants of the wife and child of one who heroically faced a danger fully equal to that encountered by the soldier in time of war.

I beg leave in closing this letter to transmit herewith an extract from the annual report of this Service for the year 1892, giving some previously expressed views upon this matter.

I have the honor to remain, very respectfully, yours,

WALTER WYMAN,  
*Supervising Surgeon-General Marine-Hospital Service.*

REPORT FROM THE COMMITTEE ON CLAIMS, SUBMITTED BY MR. BUNN, CHAIRMAN,  
UPON THE BILL FOR THE RELIEF OF THE LEGAL REPRESENTATIVES OF JOHN W.  
BRANHAM.

The Committee on Claims, to whom was referred the bill (H. R. 3317) for the relief of the legal representatives of John W. Branham, having carefully considered the same, report it back to the House with the recommendation that it do pass.

Your committee find the following to be the facts:

The late Dr. John W. Branham was an assistant surgeon in the United States Marine-Hospital Service, and was, on the 20th day of July, 1893, stationed at the marine hospital at Stapleton, N. Y.

The yellow fever had broken out at Brunswick, Ga., and the United States authorities had established quarantine regulations there.

On the 20th of July, 1893, the President of the United States, without any previous notice to Dr. Branham, under section 3, national quarantine act, approved February 15, 1893, detailed Dr. John W. Branham to proceed at once to Brunswick, Ga., and take charge of the port and execute the regulations promulgated by the Secretary of the Treasury under said act. He immediately proceeded to Brunswick, Ga., and on the 20th of August, 1893, died of yellow fever, contracted while in discharge of the duties assigned him.

Your committee, while opposed to a civil pension roll in almost any form, think that a mere statement of the facts is sufficient to convince every patriotic citizen that the Government owes no higher duty to any of its citizens than it does to Mrs. Branham, widow of John W. Branham, whom we find is now a resident of the city of Baltimore, with two infant children and penniless, and while we do not recommend that she be placed upon the pension roll, we see no reason why the act of Congress of May 4, 1882, which grants to the families of keepers and surfmen in the Life-Saving Service an amount equal to two years' pay of said keepers or surfmen in the event of death in the line of duty, should not be extended to his family, and this is what is proposed by the bill which we favorably recommend.

Your committee fearlessly blaze the way, as indicated in this report, because we think it an act of simple justice, and but poorly carrying out the implied obligation upon the Government to relieve the wants of the wife and children of one who heroically faced a danger fully equal to that encountered by the soldier in time

## OFFICERS DETAILED TO ATTEND MEDICAL AND PUBLIC HEALTH ASSOCIATIONS.

Surgs. H. W. Austin and H. R. Carter and P. A. Surg. G. T. Vaughan were detailed as delegates to the Pan-American Medical Congress convened in Washington September, 1893.

In response to an invitation from the Government of France, Surg. P. H. Bailhache was detailed by the President to serve, in conjunction with two other delegates, as representative of the United States at the Second International Sanitary Conference, held at Paris, February 7 to April 3, 1894. A summary of the proceedings of this conference appears in the latter portion of this report.

Surg. H. W. Austin was detailed to represent the Marine-Hospital Service at the Eleventh International Medical Congress, held at Rome, Italy, March 28 to April 6, 1894, and P. A. Surg. J. J. Kinyoun was detailed for the same duty at the Eighth International Congress of Hygiene and Demography at Budapest, September 7, 1894. The service was also represented in public health bodies as follows:

May 9 and 10, 1894, by Surg. J. B. Hamilton, at a conference in Chicago of the State boards of health of Illinois, Indiana, Ohio, Michigan, and Wisconsin, called on account of the alarming increase of smallpox in Chicago and the increasing danger of its spread to contiguous States; in the Congress of American Physicians and Surgeons, Washington, D. C., May 29 to June 1, 1894, by the Surgeon-General of the Marine-Hospital Service; at the meeting of the American Medical Association, San Francisco, June 5 to 8, by Surg. John Godfrey, and at the twenty-second annual meeting of the American Public Health Association at Montreal, Canada, September 25 to 28, 1894, by Surg. P. H. Bailhache and P. A. Surg. Charles E. Banks.

## REPORT OF SURGEON AUSTIN, DETAILED TO ATTEND THE ELEVENTH INTERNATIONAL MEDICAL CONGRESS AT ROME.

WASHINGTON, D. C., July 9, 1894.

SIR: Having been delegated by the Secretary of the Treasury to represent the Treasury Department and the Marine-Hospital Service at the Eleventh International Medical Congress, and in compliance with your order, dated March 1, 1894, I left the city of Washington for Rome March 2. Remaining overnight in New York, I took the steamer *Fulda* the following morning, March 3, for Rome, via Gibraltar. Having been granted a week's leave of absence by the Bureau, I stopped over one steamer at Gibraltar, taking the next steamer direct to Naples, where I arrived on the 22d of March. From Naples I proceeded by train to Rome, arriving there on the 23d. I immediately presented my credentials to the secretary of the International Medical Congress, and was duly registered and accredited as the delegate representing the Treasury Department and the Marine-Hospital Service of the United States.

On Wednesday, March 28, the International Exhibition of Medicine and Hygiene was formally opened with an official reception in the Palace of Fine Arts. This exhibition was gotten up by the officers of the congress, under the general direction of Professor Pagliani, and consisted of exhibits from various countries—principally



Italy and Germany—of sanitary appliances, surgical instruments, therapeutic agents, etc. There was quite a large collection of steam disinfecting plants for use in municipal disinfection, most of which were portable. I did not observe any marked improvement in these appliances over those now in use in this country. I would state that the apparatus in use by the Government of the United States for the disinfection of infected articles of merchandise or clothing is superior to anything shown at this hygienic exhibit. There were various devices for hospital stretchers, one of which I believe it would be well for the Marine-Hospital Service to adopt. It is simple in construction, consisting of bamboo poles and sail-cloth so arranged that it can be closely folded for ambulance service. It is the lightest stretcher that I have yet seen.

The congress was inaugurated on the morning of the 29th of March in the presence of His Majesty the King of Italy, accompanied by the Queen and the principal ministers of state, and the ambassadors and ministers of other countries.

The welcome was given to the various delegates and members of the congress by the minister of state, Signor Crispi, who was followed by Professor Baccelli, minister of public instruction of Italy and president of the congress. Professor Baccelli delivered an address of welcome in Latin, and formally declared the congress opened in the name of the King. The inauguration ceremonies, which were conducted in the Constanza Theater, were quite impressive and full of interest to the vast audience of learned men from every nation who were gathered in this ancient capital of the world to exchange opinions upon the one subject of common interest to all and to become acquainted with those engaged in the same labors. Upon the stage were seated the delegates from the various Governments in the uniforms of the services which they represented, and many others of distinction both in and out of the profession. The King's guard, with arms present, kept the main aisle free for the entrance of their majesties the King and Queen and his ministers, whose presence was announced in the music provided for the occasion.

The general sessions of the congress were held at the Exposition Hall, called the El Dorado. The various sections held their meetings at the Polyclinico Umberto I, which is a magnificent new hospital, not yet finished, located just outside the walls of the city. This building, in which are located the offices of the president and secretary-general, was erected for the purpose of affording clinical instruction in all branches of medicine, and all the public clinics in Rome will be transferred to this building as soon as it is completed. It is the most complete and best appointed institution of the kind in the world, and is a credit to the medical profession of the city of Rome.

The following may be mentioned among the noteworthy addresses which were delivered before the general meetings of the congress:

"Morgagni and Anatomical Thought," by Prof. Rudolph Virchow, of Berlin. It was evident that Professor Virchow was regarded as one of the great teachers of the present age. He was greeted with continued applause, and his classical address was listened to with absorbing interest.

"The Position of the State in Respect of Modern Bacteriological Research," by V. Babes, M. D., professor of experimental pathology and bacteriology in the University of Bucharest. This was a very able paper on State medicine, commencing with a brief historical survey of the same in different countries. It described the Government sanitary institutions of Roumania and the work accomplished by the same. There are many suggestions in the article that may be useful to the Bureau.

"Organization of Science," by Prof. Michael Foster, of the University of Cambridge, was a plea for the better organization of scientific workers.

"Non Noceri" (hurt not), by Professor Jacobi, of New York. This paper was an argument on what not to do, or, better, perhaps, the injuries that are done by medical men. It was well received.

Before the section of hygiene a very interesting paper was read on the epidemic of cholera in Italy, by Professor Pagliani, president of the section. I was able to obtain a copy of the same for the Bureau.

The congress was larger than any that had preceded it and included many of the great medical lights from different parts of the world. The city was overflowing with "congressisti." The principal Governments were represented by specially appointed delegates, as were also the various universities, colleges, State societies, great hospitals, etc. There was a general feeling manifested among the English-speaking members that they were shown less consideration in the assignment of time for the reading of papers and in their discussion than was accorded to some other nationalities, and, I believe, with reason. The English language is not so generally understood by the Italians as the French, and there was undoubtedly a special effort made by the officers of the congress, officers of State, and Italians generally to possess and please the Germans and Austrians. However, the English and Americans had a small representation as compared with the French, Germans, and Austrians.

Personally I was shown every attention I could desire or expect, both in the congress and in the general and special receptions.

The social features of the congress were unusually interesting. Besides the receptions given by the Queen and citizens of Rome, special privileges were afforded to members to see the ruins of historical Rome, as well as the art treasures that are preserved by church and state in this ancient city.

The work of the congress was mostly done in the various sections, and it remains to be seen how this compares with that of former congresses and what success has been achieved as a whole after the publication of the papers and the discussions thereon.

The congress closed on the 29th day of March in accordance with the programme laid down.

I transmit herewith copies of the papers read at the congress which I was able to obtain, and the official programme published by the executive committee.

Upon my return by the way of London, I made an inspection of the immigrant station at Blackwall, where were housed immigrants prior to their embarkation for the United States. The building, which is a large, three-story brick, with a large warehouse attached thereto, has been occupied in times past as a hotel, and is a good, substantial building, although not well designed for the purposes of an immigrant station. At the time of my visit there were some thirty or forty immigrants housed in the building. They were furnished with proper food, comfortable beds, and were generally well cared for. There is no disinfecting plant connected with this place, no facilities for the isolation of the sick suffering from contagious diseases, and the building is in close proximity to a railway station, where thousands of people are passing every day. The station, however, has now been abandoned, and the new station, which has been constructed by the American Line at Southampton, is used instead. I was unable, without remaining over another week in London, to visit this station at Southampton. However, I obtained from the vice-president, Mr. Wright, at New York, a complete description of the new immigrant home at Southampton, which shows that they have constructed a fine building, a complete disinfecting plant, and all the necessary accommodations for the housing and detaining of immigrants should necessity arise for their detention. These papers were referred to you, and the description of the plant was published in a number of the Abstract of Sanitary Reports.

En route, returning, I visited Paris, as well as London, and in accordance with your instructions reported to the Bureau such information as I was able to obtain of the consul-generals in those cities with reference to the prevalence of cholera in Europe.

Respectfully, yours,

H. W. AUSTIN,

*Surgeon, Marine-Hospital Service.*

The SURGEON-GENERAL, U. S. MARINE-HOSPITAL SERVICE,

*Washington, D. C.*

REPORT OF PASSED ASSISTANT SURGEON KINYOUN, DETAILED TO ATTEND THE  
EIGHTH INTERNATIONAL CONGRESS OF HYGIENE AND DEMOGRAPHY, AT BUDA-  
PESTH, HUNGARY.

WASHINGTON, D. C., *November 30, 1894.*

SIR: In accordance with your order, dated August 14, 1894, directing me to proceed to Budapesth, Hungary, and there represent the Marine-Hospital Service at the meeting of the Eighth International Congress of Hygiene and Demography, I have the honor to submit the following report:

The congress was formally opened on Sunday, September 7, under the auspices of the general government and the municipality of the city of Budapesth, the minister of the interior being the president; the delegations from the various countries responding in behalf of their Governments, Dr. John S. Billings, U. S. A., responding for the delegates of the United States.

The actual work of the congress commenced on Monday, September 3, and continued daily from 9 a. m. to 3 p. m. There were no night sessions. This time was devoted to social entertainment.

The chief interest of the congress was centered in the sections which dealt with questions relating to the etiology of disease, and to preventive medicine. These sections were always crowded. Perhaps there has never been a more brilliant assemblage of scientists at any meeting of the congress than those attending this. The delegations from the several countries of Europe were composed of men whose reputation was world-wide.

The demographical section was poorly attended, and little or no interest was manifested in the proceedings save by the English contingent. The nature of the proceedings partook more of a congress of bacteriologists than one indicated by its name.

The papers, reports, and discussions of the section of hygiene were all of interest, some of which have been made the subject of a previous communication.

The next important topic considered was an international report on diphtheria. The congress at its London meeting had appointed a committee for each country then represented, with instructions to make their reports with recommendations at the next convening of the congress. The most complete report was that of the German, under the direction of Professor Loeffler. The second of importance was that of the French, submitted by Professor Roux, of Paris. The Austrian report was short, concise, and clear, and was submitted by Professor Wiederhofer. The report for the United States made a good impression, especially that part dealing with the bacteriology of the disease, this being made by Professor Welch, of Johns Hopkins University. The English report was in many ways disappointing. It appeared very good if viewed from a standpoint of ten years ago. There was a unanimity of opinion on the principal points in the management and control of the disease. The American system (as it was termed) for making the bacteriological diagnosis was highly commended by all.

The great question of the day, "Immunity and immunization," was ably set forth in papers by Buchner, Metchnikoff, Loeffler, Behring, Roux, and Denys. The discussion following their papers was of great scientific and sociological interest. Professor Roux was given an ovation after his report on the serum-therapy of diphtheria. It was the most complete exposition of the subject, and embraced his experience for over four years in his laboratory and the treatment of six hundred cases of diphtheria. The mortality from this disease of cases admitted to the hospitals in Paris was over 50 per cent, and under the serum-therapy had been reduced to less than 26 per cent. This certainly opens up a broad field in the domain of preventive medicine.

Cholera was discussed in all its different phases, especially with reference to the *variation* of the spirillum with different epidemics, and also its vitality in water.

Metchnikoff and Gruber, of Vienna, held opposing views regarding the virulence. Gruber could not accept Pfeiffer's methods for an absolute diagnosis. Dr. Ernest Hart, of London, was to have read a paper on cholera before the general sessions, but was unable to do so in person. This duty devolved upon Dr. Hassan, of Calcutta. The same views were held by Dr. Hart in this paper as he had theretofore advanced, except, perhaps, that they were more strongly expressed, especially in certain parts of the address which dealt with cholera among the pilgrims. Professor Pagliani, of Rome, delivered a most interesting address on maritime quarantine, in which the management of cholera invasion by sea was ably presented. It appeared to me that he was thoroughly imbued with the spirit of United States quarantine methods, and spoke perforce of his convictions. The discussion of the paper was mild, but it gave some of the English delegation an opportunity to air their views on the absolute uselessness of quarantine measures.

Martin, of Paris, presented a very complete description of the management of infectious diseases in the city of Paris, the service of which he is chief. I transmit a copy of his paper for your information.

Dr. Celli, of Rome, brought to the notice of the congress a very interesting paper on pathogenic amœba, a subject which he has been for years investigating.

Dr. Laveran also brought out some new points concerning malaria.

No paper was offered on yellow fever.

While attending the congress I had the good fortune to meet several physicians from Russia and from the provinces of Austro-Hungary and Germany, which were at that time infected with cholera. It was their opinion that cholera would exist for two seasons at least in the Russian provinces, and perhaps for another season in Galicia and Eastern Prussia. Italy would be endangered should the disease advance further south.

The congress was formally closed on Sunday, September 9, by the president and other officers. It became my duty to return the thanks of the delegates from the United States to the president and secretary, and to the people of Budapesth, for their courtesies.

As my orders contemplated a visit to the different laboratories of Europe for the purpose of familiarizing myself with the different methods, etc., I first communicated with Professor Tizzoni, of Bologna, requesting the privilege of working in his laboratory. After considerable delay I was informed that it was not possible to accommodate anyone in his laboratory because of the want of room. He would, however, be pleased to see me at any time after November 15 for the purpose of inspecting his work. I had in the meantime accepted Professor Roux's invitation for the course of instruction in the production of the diphtheria antitoxin, which would militate against my going at that time, so his invitation was declined with regrets. On leaving Budapesth I went to Vienna, Prague, and Munich, visiting the several laboratories of these places and remaining only so long as was necessary for me to familiarize myself with their methods of work.

On completion of this duty I proceeded to Paris, where I commenced my study in the treatment of diphtheria and in the preparation of its antitoxin. A special report of this part of my tour of duty has been transmitted.

From Paris I went direct to Berlin, where I remained for three weeks. I was given the full privileges of the Hygienic Institute and Professor Koch's Institute for Infectious Diseases. In the latter I had abundant opportunities given me for observing the treatment of diphtheria by the "heilserum," as it is called there.

I next visited the Hamburg Hygienic Institute, for the purpose of familiarizing myself with the new system of water filtration and their laboratory methods; also to interview Professor Rumpf concerning his method of the treatment of typhoid fever with the toxins of certain bacteria.

I then proceeded to London, visiting the several laboratories, and on completion of this work proceeded to rejoin my station.

Respectfully submitted.

J. J. KINYOUN,

*Passed Assistant Surgeon, Marine-Hospital Service.*

The SURGEON-GENERAL U. S. MARINE-HOSPITAL SERVICE,

*Washington, D. C.*

REPORT OF SURGEON BAILHACHE, DETAILED TO ATTEND THE MEETING OF THE  
AMERICAN PUBLIC HEALTH ASSOCIATION AT MONTREAL.

NEW YORK, N. Y., *October 2, 1894.*

SIR: I have the honor to report that the meeting of the American Public Health Association, which convened in Montreal, Canada, on the 25th-28th ultimo, and to which I was detailed as a representative of the United States Marine-Hospital Service, was largely attended by the State and municipal health officers and sanitarians of the United States and Mexico and the Provinces of Canada. The meeting was of unusual interest by reason of an official visit made by the members of the association to the quarantine station at Grosse Isle, some 30 miles below Quebec, on the river St. Lawrence. This station compares favorably in its equipment and management with the best upon our own coast and is ample for the protection of Canada against the introduction of contagious and infectious diseases, thereby giving the United States a guaranty of reducing to a minimum all danger of such diseases entering this country from that direction.

There was no legislative action recommended by the association, although the president of the board of health of New Orleans introduced and desired the adoption of a set of resolutions censuring the Federal Government, and particularly the Marine-Hospital Service, for its alleged interference with State and municipal boards of health in their management of quarantines, which were at first modified to the effect that the question of quarantine was too important a matter for a division of responsibility, and recommending a union of Federal, State, and municipal authorities in preventing the introduction of disease from abroad, but the whole subject was finally disposed of by a unanimous vote that the resolutions be "laid upon the table."

Very respectfully,

PRESTON H. BAILHACHE,  
*Surgeon, Marine-Hospital Service.*

The SURGEON-GENERAL U. S. MARINE-HOSPITAL SERVICE,

*Washington, D. C.*

SPECIAL DETAIL OF MEDICAL OFFICER IN CONNECTION WITH THE  
FORD'S THEATER DISASTER.

By a resolution of the United States Senate, December 14, 1893, a select committee of five Senators was appointed "to investigate the Ford Theater disaster and report to the Senate whether in law, equity, or justice the Government should compensate the persons injured or killed by that disaster, or their representatives; and if it should be so decided that they should be compensated then the committee shall investigate each individual case and report the amount of compensation that should be allowed in each case."

In accordance with the wish of the committee the Surgeon-General of the Marine-Hospital Service was directed to detail an officer, to act in connection with a surgeon of the United States Army and a surgeon of the United States Navy, to assist in the investigation. This board was

directed to report to the Hon. Isham G. Harris, United States Senate, chairman of the select committee. Its duty was to determine the degree of disability of those injured.

The board had its first meeting in April, 1894, and several during the months Congress was in session. It is still organized and subject to the orders of said committee.

Surg. F. W. Mead was detailed to serve on this board.

#### RECALL OF MEDICAL OFFICERS FROM FOREIGN PORTS.

The medical officers detailed by the President for foreign duty in the offices of consuls during the cholera epidemic of 1893, eleven in number, were recalled on December 1, 1893, with the exception of one, who remained abroad to transmit information. The services of the acting assistant surgeons necessarily employed for temporary duty in the United States during the absence of these officers have been discontinued.

The above statement illustrates a valuable feature of the Marine-Hospital organization, whose regularly commissioned officers may be detailed in emergency to unusual and important posts, their places being filled by younger officers of the regular corps, whose ordinary duties are in turn temporarily performed by acting assistant surgeons serving under their direction. It is pertinent to add that since the passage of the act of Congress approved February 15, 1893, granting additional powers and imposing additional duties upon the Marine-Hospital Service, notwithstanding the large amount of additional work thus imposed, the regular corps of the Service has been increased by only three additions.

It may be of interest also to record here the following statement regarding the medical corps and employees of the Marine-Hospital Service: At the present date the corps of medical officers commissioned by the President numbers 63, there being 16 surgeons, 31 passed assistant surgeons, and 16 assistant surgeons. The acting assistant surgeons number 84. There are 32 hospital stewards, 250 hospital attendants, and 110 quarantine employees. The number of quarantine employees varies according to the season, the force at the quarantine stations being materially reduced during the winter months. The Service has under its control 19 marine hospitals of its own. Beside these there are 11 contract hospitals in which Marine-Hospital patients are under the charge of officers of the regular corps; 58 contract hospitals in which patients are under the charge of acting assistant surgeons of the Service, and 9 hospitals in which Marine-Hospital patients receive care and treatment under contract with the authorized officials of said hospitals.

An illustration of the growth of the work of the Service is furnished by a statement of its disbursements, which in 1879 amounted to \$375,164.01, while in the fiscal year 1894 the disbursements were \$1,653,064.

The value of the services of the officers of this corps is shown by an enumeration of their various duties, as follows:

(1) The management of hospitals and relief stations for the care of sick and disabled seamen of the merchant marine of the United States, over 50,000 seamen being treated annually.

(2) The active management of ten national quarantine stations, including the steam vessels belonging thereto. These national quarantine stations, particularly in the South, are the refuge stations for neighboring local quarantines, and for a large number of years have done the greater part of the actual cleansing and disinfecting of infected vessels. In the last fifteen years their hospitals have, with but few exceptions, received and cared for all the yellow-fever patients taken from vessels entering United States ports.

(3) Inspection of local quarantines, under the act of February 15, 1893.

(4) Investigation of reported cases of epidemic disease, including bacteriological examinations and local sanitary conditions.

(5) The suppression of epidemic diseases and enforcement of the interstate quarantine regulations.

(6) The collection and dissemination of mortality statistics and sanitary information.

(7) Scientific investigation into the causes of disease.

(8) The examination of pilots for color-blindness.

(9) Physical examination of keepers and crews of the life-saving stations; professional examination of their claims on account of disability and their treatment in hospital.

(10) Physical examination and treatment of the officers and crews of the Revenue-Cutter Service, both prior and subsequent to enlistment, and medical and surgical service under special detail on revenue cutters engaged in Arctic cruising, or on other long voyages.

(11) Physical examination of immigrants under the law excluding those afflicted with contagious disease.

(12) Service in the office of consuls at foreign ports to assure the accuracy of bills of health given to vessels.

(13) Miscellaneous duties imposed from time to time by the Treasury Department.

#### AID TO OTHER BRANCHES OF THE GOVERNMENT SERVICE.

The following is a summary of the aid given to other branches of the Government service during the fiscal year 1894:

(1) *Aid to the Life-Saving Service.*—During the year ended June 30, 1894, there were 1,076 surfmen and keepers examined, of which number 22 were rejected for physical causes; 170 claims for pensions and other benefits provided by the act of May 4, 1882, made by keepers and crews of life-saving stations have been passed upon in the office of the Surgeon-General.

The benefits of the marine hospitals have been extended to the keepers and surfmen of the Life-Saving Service in accordance with the following law and circular based thereon:

AN ACT extending the benefits of the marine hospitals to the keepers and crews of life-saving stations.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the privilege of admission to and temporary treatment in the marine hospitals under the control of the Government of the United States be, and is hereby, extended to the keepers and crews of the Life-Saving Service under the same rules and regulations as those governing sailors and seamen, and for the purposes of this act members of the Life-Saving Service shall be received in said hospitals and treated therein, and at the dispensaries thereof, as are seamen of American registered vessels; but this act shall not be so construed as to compel the establishment of hospitals or dispensaries for the benefit of said keepers and crews, nor as establishing a home for the same when permanently disabled.*

Approved August 4, 1894

[Circular.]

TREASURY DEPARTMENT,  
OFFICE OF SUPERVISING SURGEON-GENERAL, U. S. M. H. S.,  
Washington, D. C., August 31, 1894.

*To medical officers of the Marine-Hospital Service, acting assistant surgeons, keepers and surfmen of life-saving stations, and others:*

In accordance with the act of Congress approved August 4, 1894, entitled "An act extending the benefits of the marine hospitals to the keepers and crews of life-saving stations," the following regulations are hereby promulgated:

1. Under the terms of said act keepers and surfmen of the Life-Saving Service will be treated in the marine hospitals under the control of the Government of the United States, but not in contract hospitals nor at their homes, and will receive dispensary or out relief only at the dispensaries connected with the said marine hospitals.

Following is a list of the hospitals and offices (dispensaries) where applicants will be received for treatment:

Baltimore, Md., office, custom-house; hospital, city.  
Boston, Mass., office, custom-house; hospital, Chelsea.  
Cairo, Ill., hospital and office together.  
Chicago, Ill., office, custom-house; hospital, Lake View.  
Cincinnati, Ohio, hospital and office together.  
Detroit, Mich., office, 90 Griswold street; hospital, city.  
Evansville, Ind., office, custom-house; hospital, city.  
Key West, Fla., hospital and office together.  
Louisville, Ky., office, custom-house; hospital, city.  
Memphis, Tenn., office, custom-house; hospital, city.  
Mobile, Ala., office, custom-house; hospital, city.  
New Orleans, La., office, custom-house; hospital, city.  
New York, N. Y., office, Battery, city; hospital, Stapleton, Staten Island.  
Portland, Me., office, custom-house; hospital, East Deering.  
Port Townsend, Wash., office, Water street; hospital, city.  
San Francisco, Cal., office, custom-house; hospital, city.  
St. Louis, Mo., office, old custom-house; hospital, city.  
Vineyard Haven, Mass., hospital and office together.  
Wilmington, N. C., office, custom-house; hospital, city.



2. Applicants for either hospital or office treatment should present themselves at the marine-hospital office, but may proceed to the hospital direct when circumstances so demand.

No transportation will be furnished except by ambulance, in cases requiring its use, between said office or hospital and the most convenient railroad station or steamboat landing.

3. An applicant must present a certificate, signed by a keeper, district superintendent, or assistant inspector of the Life-Saving Service, in the form prescribed by the Department, certifying to his services as a keeper or surfman of a life-saving station, and giving other satisfactory evidence that he is entitled to treatment under the regulations. When it is impracticable to obtain the certificate, signed as above required, an affidavit of the applicant as to the facts of his employment may be accepted. The applicant must be required to sign his name to the certificate before it is signed by the officer granting it.

4. The above certificate must show that the applicant is borne upon the rolls of the Life-Saving Service at the time of making the application. Applicants who have been discharged from the Life-Saving Service, being no longer members thereof, will not be granted treatment.

5. During the period when the life-saving stations are open, sick or injured keepers and surfmen will be admitted to hospital or dispensary treatment, according to the necessities of the case.

6. During the months when the stations are closed, sick or injured keepers or surfmen will be admitted as above, unless the sickness or injury is the result of employment not connected with the United States Life-Saving Service. If injured or taken sick during said months as a result of employment not connected with the Life-Saving Service, treatment will not be granted.

7. Under the terms of the act, a marine hospital will not be considered a home for sick or disabled keepers or surfmen of the Life-Saving Service. Temporary treatment alone is permitted, and no keeper or surfman will be retained in hospital longer than ninety days unless special authorization is given by the Department.

8. In addition to the above, the regulations of the Marine-Hospital Service governing admission to and treatment in marine hospitals shall apply to the beneficiaries of said act of August 4, 1894. Keepers and surfmen will be entitled to the ordinary provisions only of the hospitals, and will comply with all rules and regulations relating to discipline and management.

WALTER WYMAN,

*Supervising Surgeon-General, Marine-Hospital Service.*

Approved:

J. G. CARLISLE, *Secretary.*

(2) *Aid to the Inspection Service of Steam Vessels.*—During the year 628 pilots were examined with regard to their ability to distinguish colors and 26 rejected on account of color-blindness.

(3) *Aid to the Revenue-Cutter Service.*—Five boards composed of medical officers of the Marine-Hospital Service have been convened during the year for the physical examination of officers of the Revenue-Cutter Service and of candidates for appointment as cadets in that service. There were 220 seamen examined physically as a prerequisite of their enlistment, of which number 21 were rejected. In addition to the above, a medical officer was detailed for duty on the revenue cadet bark *S. P. Chase* on her training cruise to Corunna, Spain, and the Azores.

(4) *Aid to the Immigration Service.*—Medical officers of the Marine-Hospital Service have been specially detailed at the following ports for



Marine Hospital Report, 1904.



U. S. MARINE HOSPITAL, BALTIMORE, MARYLAND—EXECUTIVE BUILDING.

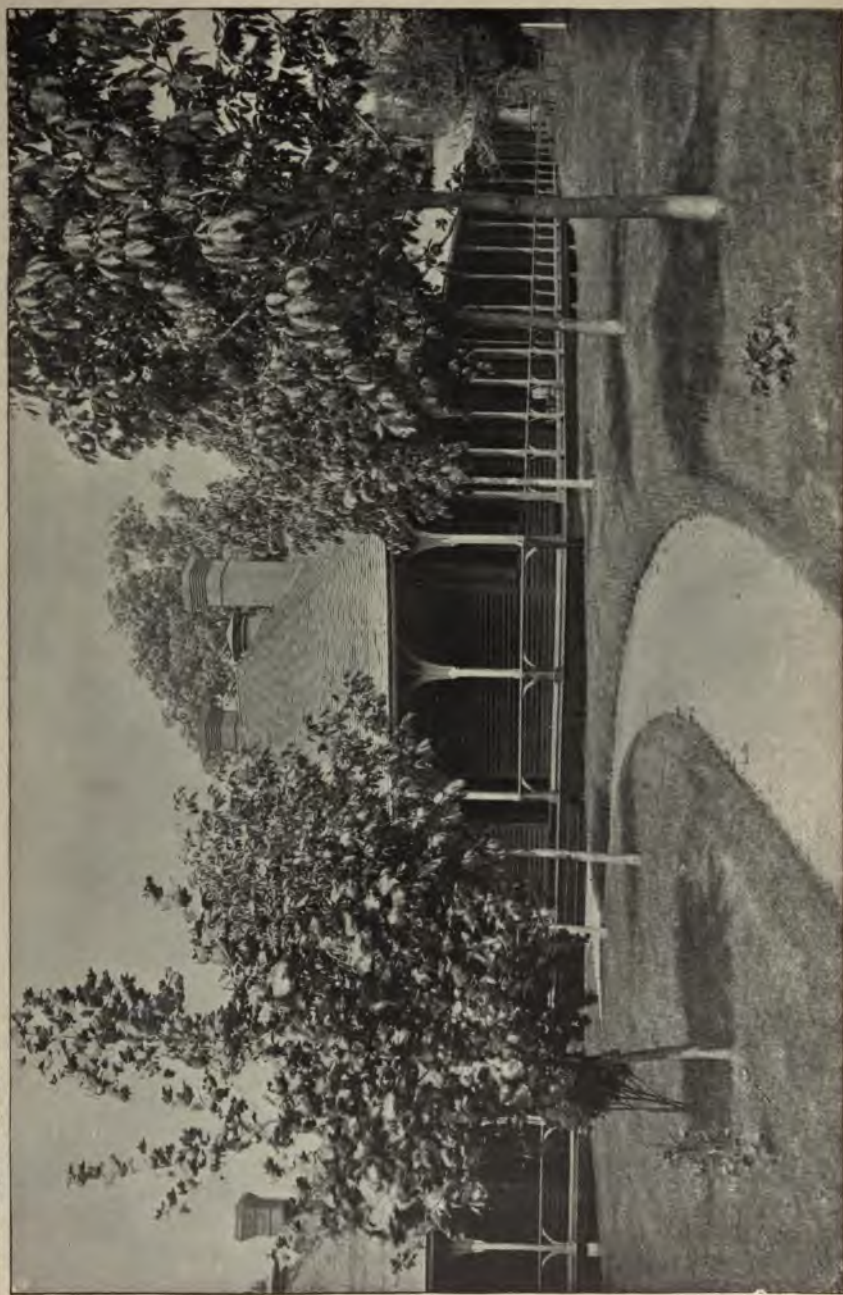




U. S. MARINE HOSPITAL, BALTIMORE, MARYLAND—EXECUTIVE BUILDING.



Marine Hospital Report, 1894.



U. S. MARINE HOSPITAL, BALTIMORE, MARYLAND—WARDS.



medical inspection of immigrants, namely: Boston, New York, Philadelphia, and Baltimore. At all other ports the regular officer on duty at the station is available for this service as occasion requires.

The following is a summary of the reports received from medical officers stationed at the ports mentioned, showing the number of immigrants examined and rejected, etc., during the fiscal year 1894:

*Portland, Me.*—Examined, 129; rejected, 2.

*Boston, Mass.*—Examined, 55,556; rejected, 50.

*New York, N. Y.*—Number of steerage passengers inspected upon arrival, 231,682; number of these physically examined, certified, and sent to hospital, 1,081; number of these physically examined, certified, and sent before the board of special inquiry for action, 527; number of these physically examined and recorded for minor defects, 1,630; number of landed cases applying for relief which were certified and sent to hospital for treatment, 471; number of landed cases applying for relief which were physically examined and certified for deportation, 215; number of landed cases applying for hospital relief examined and rejected, 151; total rejected, 366; number of patients in hospital at beginning of year, 46; number of patients admitted to hospital during year, 1,552.

*Philadelphia, Pa.*—Examined, 19,857; rejected, 52; total number treated, 86.

*Baltimore, Md.*—Examined, 13,427; rejected for physical causes, 6; temporarily detained in hospital, 86.

*New Orleans, La.*—Examined, 968; rejected, 3.

#### MARINE HOSPITALS AND RELIEF FURNISHED.

During the fiscal year ended June 30, 1894, the total number of patients treated by the service was 52,803, of which number 13,725 were treated in hospital, the remainder, 39,078, being dispensary, or out-patients. Ninety-four seamen of the merchant marine were examined before shipment as to their physical fitness, and 5 were rejected.

The following is a statement of repairs and alterations made during the fiscal year ended June 30, 1894, and of repairs and alterations still needed at the several hospitals:

*Hospital at Baltimore, Md. (erected 1887).*—Surg. G. W. Stoner reports the following repairs and alterations made in the building and grounds:

The old well on hospital grounds thoroughly cleaned, old wooden curbing removed, and the well walled up with stone; new outside door to coal cellar of boiler house; repairs and painting of steps and floors of verandas and corridors of hospital buildings and drip shelves to kitchen sinks; repairs made to brick piers and chimneys, and to rear wall of third ward; new water gutters put on roof of first ward, and all gutters and conductors of the several buildings repaired; shed addition built to stable, stalls with ground floors; stairway and feed bins put in feed room, and an old stall space converted into ambulance room; new fence put up on one side of hospital grounds, and other portions repaired; flagstaff repainted; new water-closets and bath tub put in surgeon's house, new floor in kitchen, and alterations made in brickwork of cellar doorway.

A considerable proportion of the minor repairs were made by the hospital attendants without additional expense except for material purchased.

The total cost of all the foregoing repairs was \$1,324.19.

The repairs and alterations at present necessary are water-pipe connection and alterations in buildings to introduce water from the city main, said main having

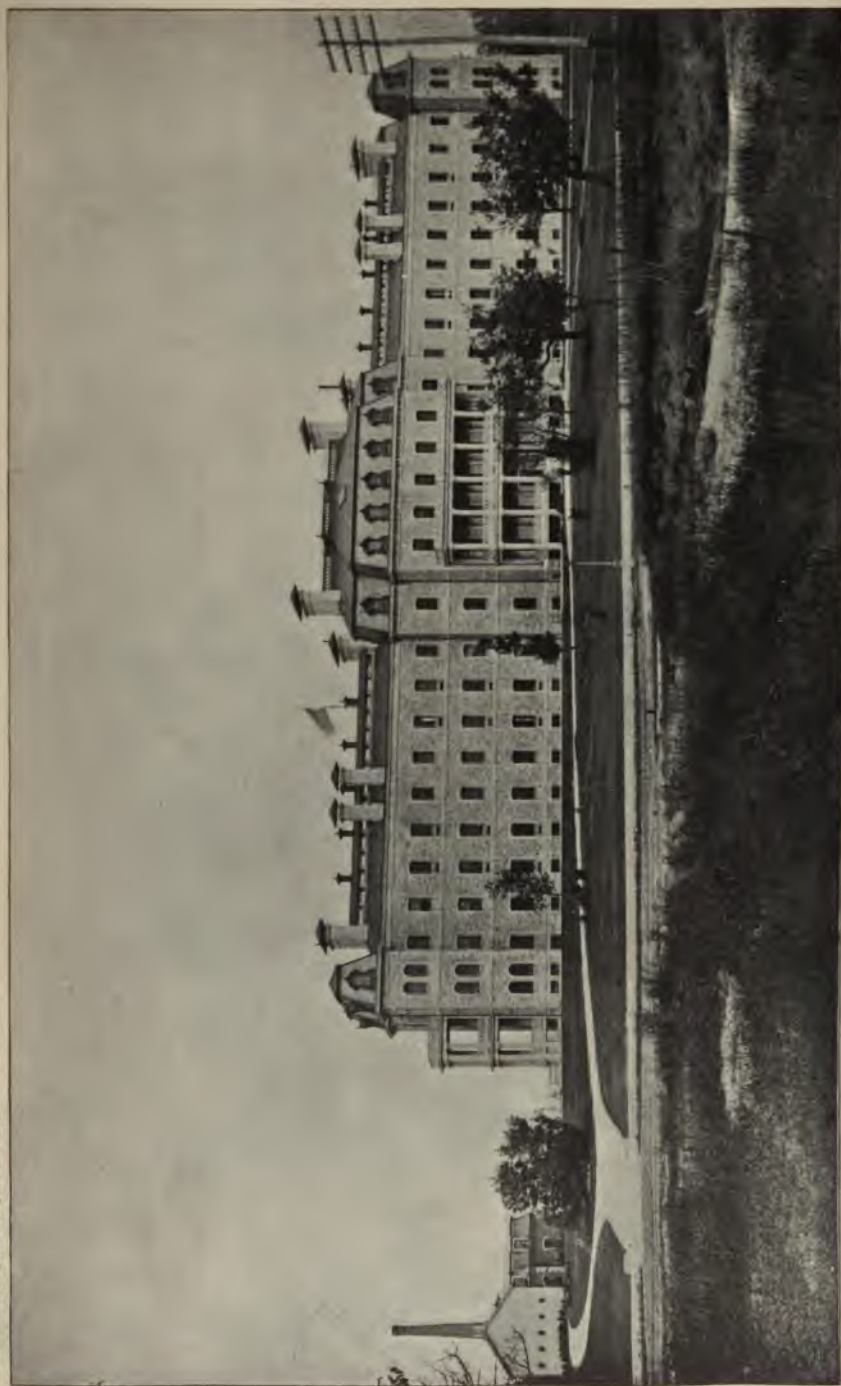




Marine Hospital Report, 1894.



U. S. MARINE HOSPITAL, PORT OF BOSTON, MASSACHUSETTS.



U. S. MARINE HOSPITAL, CHICAGO, ILLINOIS.

A separate house should be provided for the surgeon, for the fact that the hospital is frequently overcrowded and the quarters for medical officers are insufficient. An isolation ward is also required.

*Hospital at Cairo, Ill. (erected 1885).*—Asst. Surg. E. K. Sprague reports the following repairs and alterations:

The work reported in progress one year ago was completed October 3, 1893.

During the past fiscal year minor repairs were made upon the plumbing and the flagstaff.

There are needed for the current fiscal year a new floor in the laundry, dining room, and kitchen, stationary washtubs in laundry, a sink in pantry, iron castings in front of kitchen range, six new water-closets, and ventilators on roof of surgeon's house and laundry building. Repairs are necessary on the driveways, and shade trees should be planted. The estimated total cost of these repairs and alterations will probably not exceed \$1,900.

*Hospital at Chicago, Ill. (erected 1873).*—Surg. John B. Hamilton reports the following repairs made to this hospital during the past fiscal year; also those necessary for the year ensuing:

Under contract approved September 12, 1893, repairs to the amount of \$8,936 were made under the following specifications: The present wood floor in the main hall on the east side of the central portion of the building to be removed and substituted by a new floor of artificial stone.

Tiling: All bathrooms, including floors under closets and urinals, to be tiled with marble, laid in cement mortar; bathroom in surgeon's quarters to have encaustic instead of marble tiling. The walls of toilet rooms will be wainscoted up from floor 5 feet, and Italian marble substituted for the wooden partitions of closets and urinals.

Stonework: The stonework of porticos to be lead calked, and necessary gutters cut in stone flagging to secure proper drainage. All exterior stonework to be repointed wherever necessary with pure Portland cement. The stone coping to be reset wherever required on proper lines.

Engine house: The walls of the engine house are to be pointed and tuck pointed, as also the smokestacks.

A new maple floor to be laid in the Miller ward. New floor in stable of 2-inch plank. New floor and doors for coal shed, the doors to be hung on rollers of approved pattern, and the roof to be reshingled.

Painting: The surgeon's quarters, surgical operating room, six wards, and the walls, woodwork, and side stairs on the north and south sides to be repainted. All tin and copper roofing and gutters of the main building, also roof of engine house, to be repainted two coats. All new woodwork named in specification to be painted with white lead and oil. The wainscoting in bathrooms and smoking rooms to be painted with porcelain paint. The outside of the stable and coal shed to be repainted.

Steam heating: The pipes under the wood floor of the basement are to be lowered 4 inches, inclosed in a brick trench, and covered with a cast-iron covering, with iron rings to provide for easy removal.

Sewerage: There will be constructed on the north side of the engine house two drains, 200 feet long and 6 inches in diameter; these drains to connect with catch basins made of good sewer brick.

Flagstaff: The present flagstaff to be removed from top of building and a new one placed on the grounds east of the building.

Repairs were made to the Hyatt water filter, and to the boilers and cooking range. The pumps in the engine house were also repaired.

The following alterations and repairs, stated in letter of July 10, 1893, are still necessary: A new operating room, planned according to modern ideas, should be

built. The room now used for that purpose is not only unsuitable, but is needed for other uses. There is no reception room in this hospital where patients can see their friends. The operating room if built of stone, to correspond with the outside of the building, would cost \$10,000 complete.

I respectfully renew my recommendation for the building of a suitable cottage for the commanding officer. The quarters are at present insufficient in case a full complement of officers are serving at the station. To make it slightly, and make it correspond with the main building, it should have a stone facing, at least. An electric-light plant would be very desirable, giving better light and more security against fire.

The fences about the grounds are fallen down and should be replaced with a low brick wall on two sides. The street in front of the reservation is the only unimproved street in the vicinity. The city has macadamized one-half of the street, but the side next to the hospital remains in its natural state, a constant eyesore and an annoyance, and the cause of much unpleasant comment on the part of the people passing the institution and those living in the neighborhood.

*Hospital at Cincinnati, Ohio (erected 1884).*—P. A. Surg. P. C. Kalloch makes the following report of repairs and alterations made upon the hospital and grounds at this station:

The windows, doors, and other woodwork of basement of main building were painted at a cost of \$57; a new manure pit was built at a cost of \$40; the stable was repaired and a new floor put in; the floor in the lower ward and kitchen was renewed where found necessary. The main building was painted outside and the wards inside; the Pearl street entrance was repaired, the iron railing of main entrance removed, and other miscellaneous repairs, in accordance with specifications, were made at a total cost of \$2,625.

The roofs of main building, grounds, and cottage were repaired and painted at a cost of \$76; two ventilating windows were placed in the surgeon's cottage at a cost of \$55; a new hot-water boiler, with all connections, was put in, costing \$510; the plumbing in the acting assistant surgeon's quarters was put in a sanitary condition at a cost of \$65; the steward's quarters were repaired and altered at a cost of \$293; a new water meter was purchased at a cost of \$240; the water-supply pipes were renewed at a cost of \$625; the acting assistant surgeon's quarters were altered at a cost of \$75; the down spouts of the wards repaired at a cost of \$26; and a pressure regulator was attached to the supply pipe, costing \$48.

The following repairs and alterations are necessary for the ensuing fiscal year, as stated by the medical officer:

Removal of partitions between small rooms, \$50; excavation of laundry, \$117; extending area ways, \$935; closets for linen and attendants' effects, \$164. This has already been recommended by an inspector of public buildings. Steam laundry plant, \$3,700; painting, \$790; addition of one story to cottage, \$1,100; minor repairs to main building and east ward, \$110; repairs to walks, steps, and gutters, \$550; and repairs to heating apparatus, \$3,200.

*Hospital at Detroit, Mich. (erected 1857).*—Surg. W. H. H. Hutten makes the following report of repairs and alterations made at this hospital for the fiscal year ending June 30, 1894:

Plumbing to the amount of \$83.77. A new set of grate bars was put into the heating apparatus at an expense of \$60.

Painting: All the woodwork in the six wards was painted, floors stained and oiled, walls and ceilings painted and calcimined, the floors of the three hallways were stained and oiled, ceilings calcimined, all the bathrooms and water-closets were painted, as were the verandas. A number of rooms in the officers'



Marine Hospital Report, 1894.

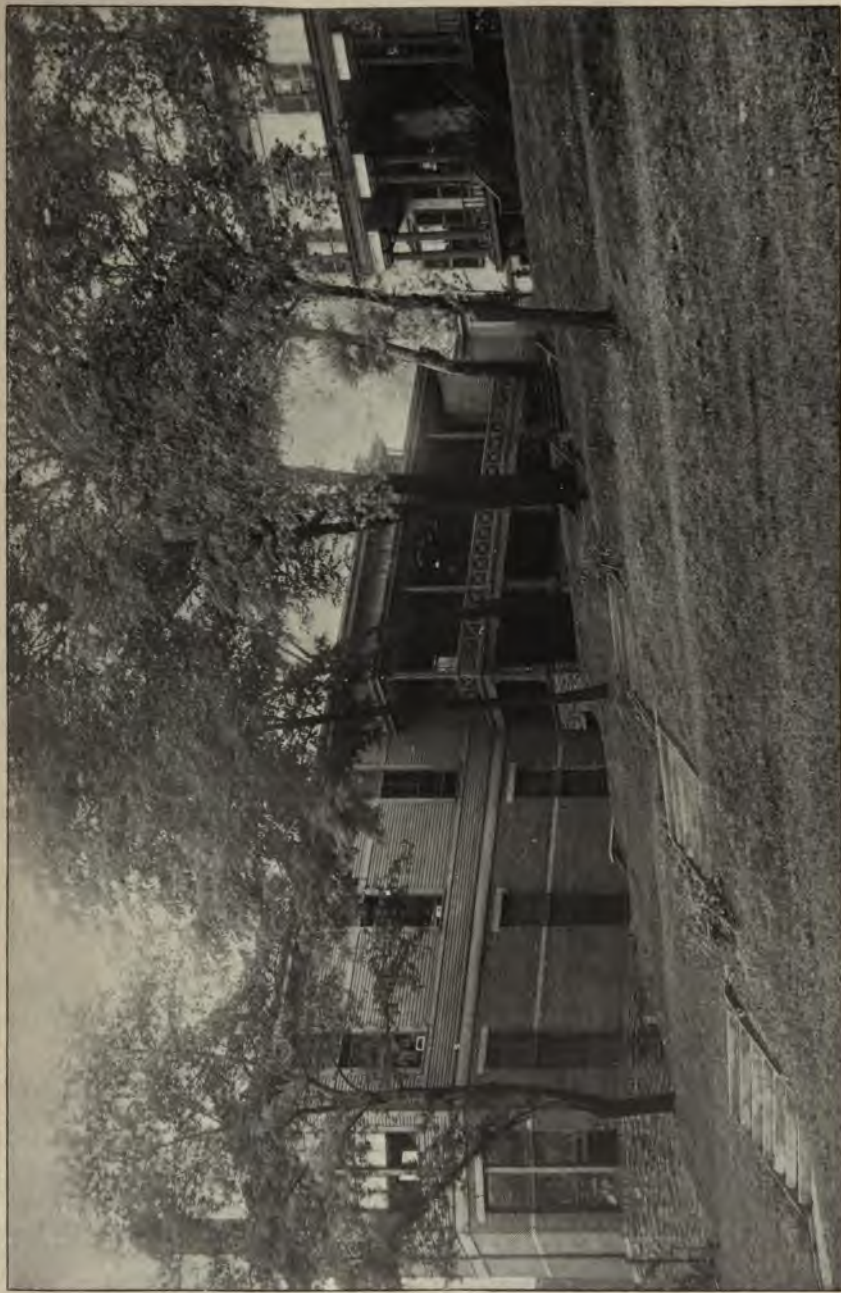


U. S. MARINE HOSPITAL, CINCINNATI, OHIO—EXECUTIVE BUILDING AND GATEWAY.









U. S. MARINE HOSPITAL, CINCINNATI, OHIO—EXECUTIVE BUILDING AND ONE WARD.

quarters were painted and calcimined. The barn, engine house, the iron railing in front of hospital, and the hospital roof were painted. The material used in doing this painting cost \$220.80; the work was performed by the attendants.

In my report to the Bureau dated July 6, 1893, I stated that there was no means of ventilating the hospital except by the doors and windows, and I recommended that a steam chamber be placed in the basement through which exterior air could be forced by a blower or fan, and the warm air distributed through all parts of the hospital. The foul air could make its exit by means of a shaft placed in the center of the building with a suction funnel on the top, such as is used to ventilate steamship compartments. As the flues and the openings in the chimneys already exist, the only portion to be constructed would be the steam chamber and the central extracting shaft, which could be built at a probable cost of \$2,000.

I also stated the plumbing in the hospital was in a bad condition, and that the old bowls and wash sinks should be taken out and replaced by new ones. The floors and walls of the water-closets to the height of 3 feet should be laid with glazed tiling. The probable cost will be about \$1,000.

The old bath tubs in the hospital should be replaced by those of new pattern. The kind needed would cost about \$250.

The stable, barn, and ambulance floors are in poor condition and need repair.

The outside of the hospital should be repainted. The original color has faded and become black from the smoke and dust of the city. The probable cost for the work will be about \$500.

*Hospital at Evansville, Ind. (erected 1891).*—P. A. Surg. P. M. Carington makes the following report of this hospital:

Minor repairs only have been made during the past fiscal year, amounting to \$330.11. Of the repairs and alterations needed, the matter of first importance and necessity is the retaining wall for the protection of the north side of the reservation. The reservation fence stands just on the border line where the embankment, produced by grading and filling in, terminates abruptly; and the laundry building extends to within 2 feet of the decline. The fence is already undermined, and the foundation of the laundry building is gradually being encroached upon.

All of the hospital buildings require painting. The necessity for this work seems urgent. The brick chimney of the boiler house should be extended 15 feet higher, in the interest of economy and cleanliness, if the use of bituminous coal is to be continued. This chimney extends about 6 feet above the roofs of the buildings.

An additional bath tub is necessary in the quarters of the medical officer; new and larger sinks should be placed in ward dining rooms, as also in the hospital kitchen.

Cement or artificial stone sidewalks should be made from the hospital gate to the entrances of the various buildings.

*Hospital at Key West, Fla. (erected 1845).*—P. A. Surg. G. B. Young reports the following repairs made at this hospital during the past fiscal year:

Concrete floors have been laid in the basement of the main building, the exterior stairs repaired, changes made in door openings in basement, a new roof for the entire building, part of the exterior and interior of building painted, and miscellaneous repairs made to sash, blinds, and plastering. A second story has been added to the laundry building, a concrete floor laid, soapstone tubs put in place, and a force pump and tank connected with the cistern. A new cistern has been built and all gutters and pumps repaired or renewed. Tiled drains have been laid from kitchen and laundry to sea, and the sea wall put in good condition. These various repairs have aggregated \$5,875.

The wooden fence that surrounds the reservation is in poor condition and beyond repair. It should be replaced by a low wire fence in a concrete base. The dead-house occupies a prominent place in the front yard and is inconveniently located. It should be moved some 20 feet south.

The isolating ward and all other outbuildings are rapidly deteriorating for lack of paint, and shingles on the roofs of several of the buildings are dropping off.

A sink is urgently needed in the dispensary, with tank and force pump. The plastering in the kitchen should be replaced.

There is a large amount of painting and minor repairs necessary in order to preserve the work already done. Nearly all of this work can be done by the attendants if the material is supplied.

The fence, kitchen ceiling, and dispensary sink are urgently needed.

*Hospital at Louisville, Ky. (erected 1852).*—P. A. Surg. H. T. Goodwin makes the following statement of repairs and alterations made upon the hospital and grounds during the fiscal year ending June 30, 1894, and an estimate of necessary repairs, with cost, during the current fiscal year:

Painting exterior of hospital; cost, \$740. One room made into an operating room—an oak floor laid, stationary and marble stand, sink with hot and cold water; cost, \$84. A double gate of oak substituted for the old bar gate at eastern entrance; cost, \$63. A partition in an unused ward to convert part of same into a storeroom, and a doorway made between two front rooms in second story; cost, \$47. Painting five rooms on first floor, four on second, the hallways, and two wards; cost, \$298. Old stable and carriage house torn down and a brick stable, carriage house, and dead-house erected; cost, \$1,147. New arches over two cisterns; cost, \$88. Painting done by attendants; cost of material, \$50.58. Repairs to plumbing, \$120.74. Electric-bell system, \$41.50.

The following is submitted for work considered necessary during the current year:

Heating apparatus, \$3,500; repairs to brick walls surrounding reservation, \$1,700; repairs to plumbing, \$100; repairs to area and cellar walls, including an iron rail, \$65; repairs to brick wall and fences, \$200.

No expenditure has ever been made on the walks and approaches to the hospital. At present there is a sidewalk only on the street facing the south side of the reservation. On the other three streets there are only earth walks, which in rainy weather are ankle deep in mud. This wretched condition of the streets surrounding Federal property is the cause of constant and severe criticism. The estimated cost of grading and putting down a brick pavement is \$2,500.

*Hospital at Memphis, Tenn. (erected 1885).*—P. A. Surg. A. C. Smith reports the following repairs made at this hospital during the past fiscal year:

Hemp line and sash cord for halyards, \$2.97; repairing the hospital sewer outside the grounds, \$19.95; repairing leak in water pipe, \$25.55; repairing three broken water-closets, \$35; repairs to faucets, \$2.80; repairs to waste pipe, \$24.73; glass to replace broken windows, \$8.92. Expenditure for the purchase of lumber, nails, etc., for the repair of fences, relaying floors of hospital kitchen and piazza of executive building, building tool house, and minor repairs, \$68.20.

An expenditure was incurred under contract for laying new water-pipe, erecting fire hydrants, repairing electric bells, repairing gates, and placing a bell at small gate. Total cost, \$482.

The following repairs are required during the present fiscal year: Painting the building outside and inside and preliminary repairs to woodwork, windows, walls, water pipes, grates, and mantels, \$3,000; laying a pipe for carrying hot water from *the kitchen* to the executive building and putting a sink in the steward's quarters,



U. S. MARINE HOSPITAL, LOUISVILLE, KENTUCKY.

Photo E. H. Co. N.Y.





Marine Hospital Report, 1894.



U. S. MARINE HOSPITAL, MEMPHIS, TENNESSEE.







Marine Hospital Report, 1894.

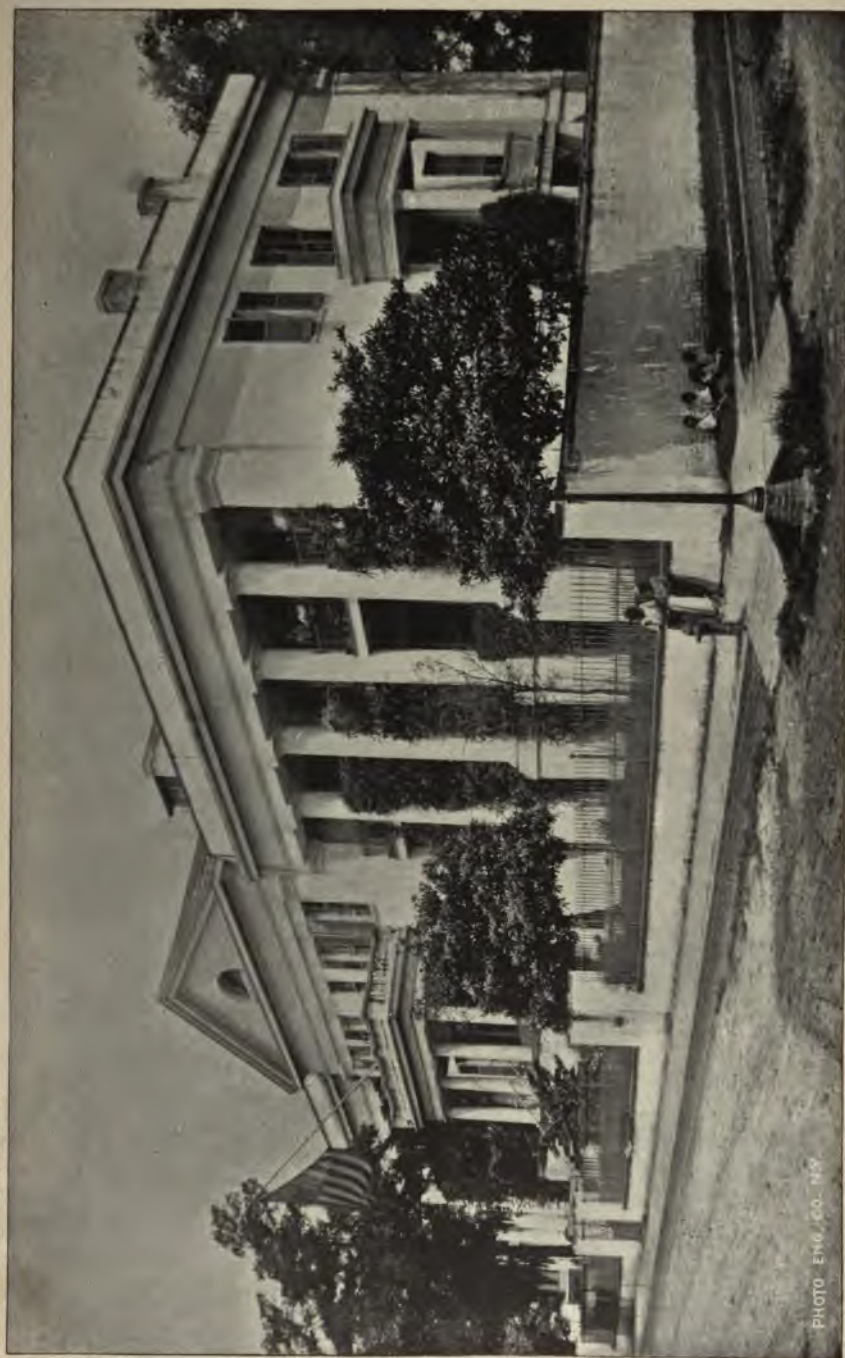
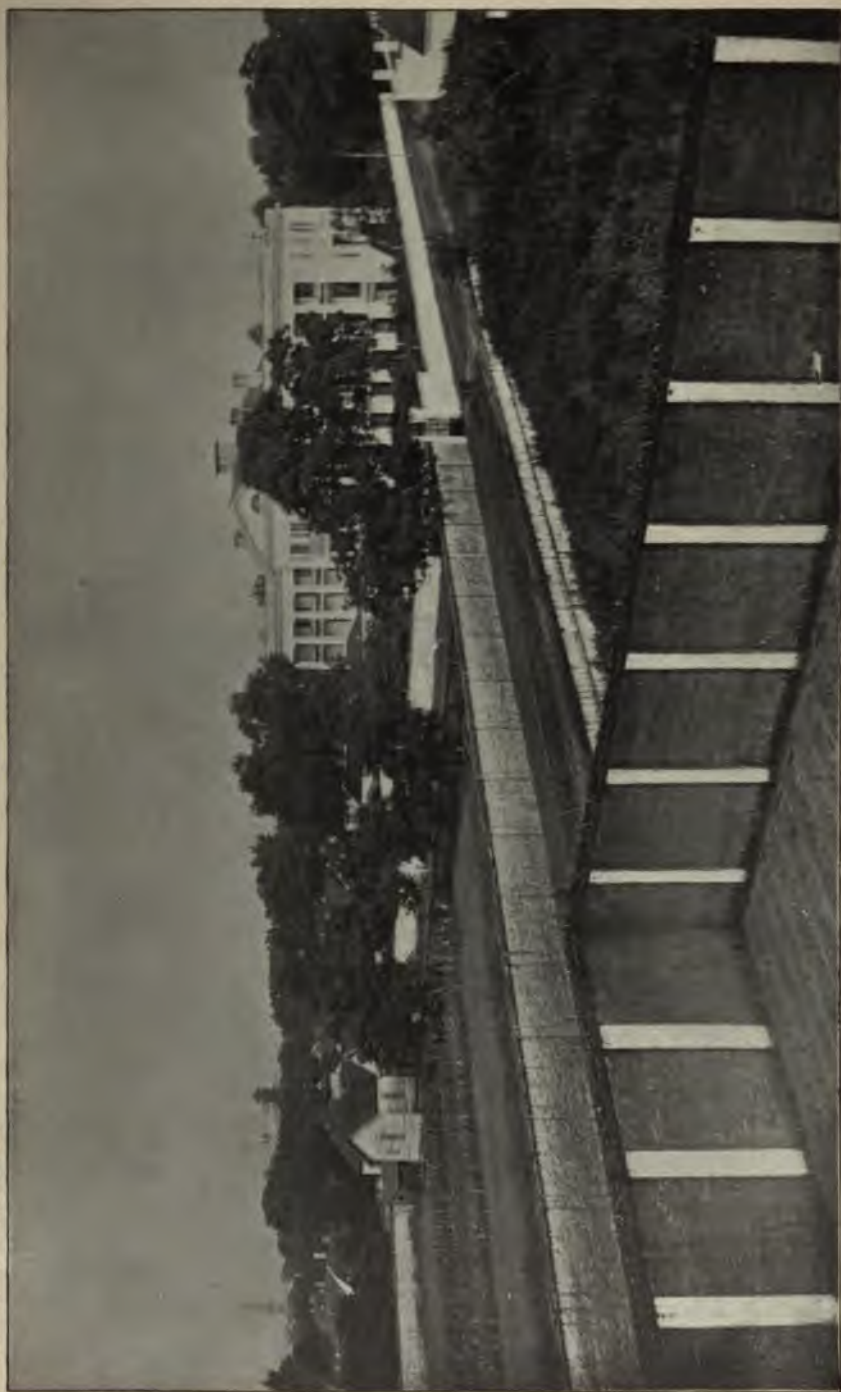


PHOTO ENG. CO. N.Y.

U. S. MARINE HOSPITAL, MOBILE, ALABAMA.





U. S. MARINE HOSPITAL, MOBILE, ALABAMA. (VIEW FROM REAR.)

\$75; overhauling and repairing water-closets, \$150. Besides these repairs stone-wall abutments are necessary to retain the embankments, and a fence to surround the reservation.

*Hospital at Mobile, Ala. (erected 1843).*—Surg. C. S. D. Fessenden reports the following repairs and alterations made at this hospital during the fiscal year ending June 30, 1894:

New sink in surgeon's quarters, \$24; repairing grates, etc., \$103.50; down spout from roof, \$7; paints, oils, and brushes, \$64.90; repairs to plastering, \$25; repairs to roof, \$15; new floor in basement, \$504; minor repairs, \$24.90.

The following repairs will be necessary during the present fiscal year:

New floors in surgeon's quarters; new bath tub in surgeon's quarters; new sink in hospital kitchen; painting wards; two waste-pipe funnels and one urinal, and three new urinals in the wards. The total estimated cost of these repairs will not exceed \$350.

*Hospital at New Orleans, La. (erected 1885).*—Surg. James M. Gassaway reports the following repairs and alterations made during the past year:

The old and unsafe main boiler, upon which the station depended for pumping water into the reservation and furnishing all the steam power, having entirely broken down, was replaced by a horizontal boiler, 10 feet by 44 inches, with thirty-six 3-inch tubes, set in brickwork and properly connected, at a total cost of \$829. The inside of the three wards, with their offices, smoking rooms, bathroom, attendants' rooms, mortuary, and several rooms in the quarters, have been painted, and the outside of the wards, galleries, windows, blinds, kitchen, and stable have received one or more coats of paint. Several of the outbuildings and the underpinning of the wards have been whitewashed. This work has been done by the attendants, at an expense, for paints, brushes, and lime, of \$410. The roofs and gutters of several of the buildings have been repaired, at a cost of \$235. The urinals, water-closets, bath tubs, and wash basins of the wards and quarters have been repaired, at a cost for material of \$41.

The water-supply system is now undergoing improvement, for which an appropriation of \$3,000 was made by Congress August 12, 1892.

Repairs have been made to the woodwork of the buildings, board walks, fences, gates, exposed gas, water, and steam pipes, at a cost for material of \$125. Minor repairs have been made to stoves, heaters, electric-light system, water and sewerage pumps, and to the hot-water supply, at a total cost of \$100.

A large quantity of sand and debris was removed from the batture or river bank of the reservation, where it had been deposited by the annual rise of the Mississippi River (18,368 cart loads), for which the Department was paid \$574.31.

The total expenditure for repairs and alterations for the year ending June 30, 1894, including the new water supply, not quite finished, was \$5,126.

The following repairs and alterations are necessary during the fiscal year ending June 30, 1895:

A new laundry building, with modern steam appliances, to replace the antiquated and insufficient methods still in vogue, is urgently necessary. This building should contain quarters for the attendants, with storerooms for new and condemned goods. The building containing the mortuary, stable, and carriage house should be raised some 4 feet from the ground to preserve the woodwork from decay and to secure it from the stable drainage. The ambulance house is too small and should be extended 20 feet and a second doorway made.

The surgeon's quarters should have the roof of the kitchen building raised on a level with the two-story front building, two rooms placed thereon, and a back stair-

way added. The second-story gallery contemplated by the original plan should be added. The passed assistant surgeon's quarters should be raised 8 feet and the kitchen and laundry placed beneath. The second-story gallery contemplated by the original plan should also be added. The windows of the executive building and the surgeon's and passed assistant surgeon's quarters are too small, and should be made to extend from the ceiling to the floor. The power house, covering the boiler, steam pumps for supplying water and ridding the reservation of sewage, with the electric-light engine and dynamo, and also containing the carpenter, plumbing, and steam-fitting shop, is old, badly decayed, and will soon be untenable. It should be replaced by a substantial structure designed for the purpose. The usual annual amount of painting of all the buildings will be necessary to preserve them in this climate. Miscellaneous repairs will be necessary on walks, roads, and bridges, and on fences. It is recommended that a gateway for vehicles and foot passengers should be cut through the east and one through the west wall of the reservation and connected by an 18-foot driveway.

*Hospital at Portland, Me. (erected 1859).*—P. A. Surg. C. E. Banks reports the following repairs made to this hospital and grounds during the fiscal year ending June 30, 1894:

The power house for the electric light plant, for which a special appropriation of \$6,000 has been made by Congress, was completed in January at a cost of \$2,435, and is now ready for the installation. Competitive bids for this portion of the work were received June 15 ultimo, but owing to the limited amount available, the lowest bid being in excess of the sum, no determination of the matter has been made by the Department at this date.

Repairs to plastering in the hospital building and lazaretto, costing \$114.26, have been made during the year. Renewal of the old windows in portions of the building, eighty in all, was authorized by the Department before the close of the fiscal year, to cost \$414, and this work is now under way.

A painter was employed and material to the value of \$45 was purchased to renew old paint on woodwork of corridors and rooms of the hospital. All the rooms, corridors, and halls of the building, once whitewashed, have been by gradual work painted in oil, adding greatly to the finish of the building interiorly.

Much work has been done this spring by the hospital attendants in terracing about the new power building, extending and repairing the roads and grading same, and beautifying the lawns with ornamental flower beds, without expense to the Government.

The following repairs, alterations, and improvements are recommended:

A steam laundry plant, as heretofore reported, should be furnished this hospital, at an estimated cost of \$1,000. There is room in the new power building for one suitable for this station, and the power could be derived from the boilers and engines of the electric plant or from the high-pressure boiler already in the basement of the hospital. The hot-water system supplying the kitchen and laundry is defective in the principles of its construction, and is consequently out of order a great deal, requiring the attention of a plumber every few weeks, and should be rebuilt. It has been inspected and condemned by an official detailed by the Supervising Architect.

An elevator to replace the old hand-power kitchen dumb-waiter is needed to run to the third story, of sufficient capacity to lift a helpless patient, and should be supplied. The horse stalls in the stable are not only worn out, but faulty in dimensions, and should be rebuilt on the south side of the stable.

A new door is needed at the main hospital entrance, and owing to its unprotected position on the north side, where sick and disabled seamen are landed from the ambulance, there should be a permanent hood or awning of iron work to furnish protection from rain and snow. Repairs to the grounds, renewal of the lawns, and terracing



Marine Hospital Report, 1894.



U. S. MARINE HOSPITAL, NEW ORLEANS, LOUISIANA.









U. S. MARINE HOSPITAL, PORT OF NEW YORK. (OCCUPIED UNDER LEASE. )

work are much needed. It will require a sum not less than \$1,000 to properly do this work. The building is in a conspicuously commanding position, having beautiful natural advantages, which a private owner would at once make use of in keeping the place worthy of its situation and surroundings.

*Hospital at Port Townsend, Wash.*—By an act of Congress approved March 3, 1893, \$30,000 was appropriated for the erection of a pavilion hospital at this port. Plans have been prepared and bids invited.

*Hospital at San Francisco, Cal. (erected 1875).*—Surg. John Godfrey reports the following repairs and alterations made at this hospital during the fiscal year ending June 30, 1894:

A 48-foot extension to the west wing of the new ward building has been constructed for \$2,200, a concrete floor for same for \$145, a boiler house and laundry building has been erected for \$6,497, and a steam plant is being laid at a cost of \$15,114. Repairs of a minor character were made by attendants, including the laying of a board walk from the hospital to Lake street. The material for same cost \$113.

The hospital buildings, officers' quarters, the roofs, tanks, and flagstaff need painting. The old water-closets, bath tubs, and urinals in all the buildings need to be replaced with modern sanitary ones. New sinks for kitchen and wards are necessary. The old laundry building should be raised one story and converted into quarters for attendants. Minor repairs are necessary to floors, dispensary, roofs, and chimneys.

*Hospital at St. Louis, Mo. (erected 1885).*—P. A. Surg. D. A. Carmichael reports the following repairs and alterations made in building and grounds at this station:

Repairs to ranges in surgeon's quarters and hospital kitchen, \$74.50; repairs to roof of old building, \$472; repairs to roof of executive building and wards, \$38; 119 door and window screens in executive building and wards, \$354; new sinks in hospital kitchen and patients' dining room, \$25.15; repairs to plumbing, \$34; paints and oils, \$49.75; new tubes in high-pressure boiler, \$73; scraping and painting smokestack, \$18; 6 new sash frames in old building, \$44; new cedar posts for grape vines in garden, \$40.80.

The interior of the executive building and the wainscoting of wards have been painted by the hospital employees. The hospital fence has also been repaired, and shelving has been put in dispensary, subsistence storeroom, and general storeroom.

The repairs and alterations now necessary are:

New brick stable and barn, \$5,000; iron tank and hose, in case of fire, \$2,000; new floors in executive building, wards, galleries, laundry, walk from wards to kitchen, and three new doors in old building, \$800; plastering wards, surgeon's quarters, laundry, and executive building, \$80; repairs to stonework and steps on old building, \$60; repairs to fence, \$30; paint for radiators and alteration of steam-heating apparatus, \$800; alteration of smokestack and repairs to brickwork of boiler house, \$400; 1,000-gallon tank for reception of filtered water for laundry purposes, \$100.

*Hospital at Wilmington, N. C. (erected 1859).*—Surg. John Vasant reports the following repairs and alterations made at this hospital:

Lowering overflow pipe, closing old outlet, putting in telltale pipe and float valve for water tank, \$38; repairing stable and laying a plank walk in front of grounds, \$100; minor repairs to gas pipe, elevator, and flagstaff, \$6.

During the current fiscal year ending June 30, 1895, it is estimated that the following repairs will be necessary:

Repainting roof, painting cornice and all ironwork of building, also the floors and galleries; repair and painting front fence, a cement walk from the front gate to steps of hospital, and a hydrant in grounds. Minor repairs are necessary to electric bells and to plumbing.

*Hospital at Vineyard Haven, Mass. (established 1880).*—P. A. Surg. E. R. Houghton reports the following repairs and alterations on the hospital and grounds during the fiscal year ending June 30, 1894:

Repairing the drains at a cost of \$9.37 was the only work done at this station except such as was made by the attendants upon the grounds.

The following is an estimate of the cost of repairs that are considered necessary: Repairing road of reservation, \$100; repair to steps, \$15; shell-lacking ward floor, \$15; repairing windows, doors, etc., \$10; painting exterior of building, \$200.

The new hospital building authorized by Congress is in course of construction and is expected to be completed by the end of the fiscal year 1895.

#### CARE OF SEAMEN.

The provisions made for the care of seamen for the fiscal year ending June 30, 1895, at all ports where relief is furnished, are set forth in the following circular:

#### CONTRACTS FOR THE CARE OF SEAMEN, ETC.

TREASURY DEPARTMENT,  
OFFICE OF SUPERVISING SURGEON-GENERAL, U. S. M. H. S.,  
*Washington, D. C., June 20, 1894.*

The following contracts for the care of seamen entitled to relief from this Service for the fiscal year ending June 30, 1895, are published for the information of accounting officers of the Treasury Department, disbursing agents, medical officers of the Marine-Hospital Service, acting assistant surgeons, and customs officers. This circular is to be regarded as official notification of the acceptance of the proposals made by the parties designated, and must be cited, giving its number and date, on all bills for the treatment and maintenance of seamen, and for the burial of deceased patients, as the authority for any expenditure incurred under its provisions. Charges will be allowed for the day of admission of a hospital patient, but not for the day of discharge or death. The right is reserved by the Secretary of the Treasury to terminate any contract whenever the interests of the Service require it. All relief must be furnished in accordance with the revised regulations of the Marine-Hospital Service; and, in consequence of the largely increased expenditures for relief, and of the limited sources of income, it has become necessary to give notice that, as provided in the regulations, no allowance will be made for expenditures incurred at any other station than those named in this circular.

The term "contagious diseases" wherever occurring in this circular, except as to specific contracts made otherwise, includes only those diseases which, under usual municipal regulations, are required to be treated in a pesthouse, namely, cholera, yellow fever, plague, or smallpox, and in some municipalities, measles.

WALTER WYMAN,  
*Supervising Surgeon-General U. S. Marine-Hospital Service.*

Approved:

J. G. CARLISLE,

*Secretary of the Treasury.*

Marine Hospital Report, 1884.

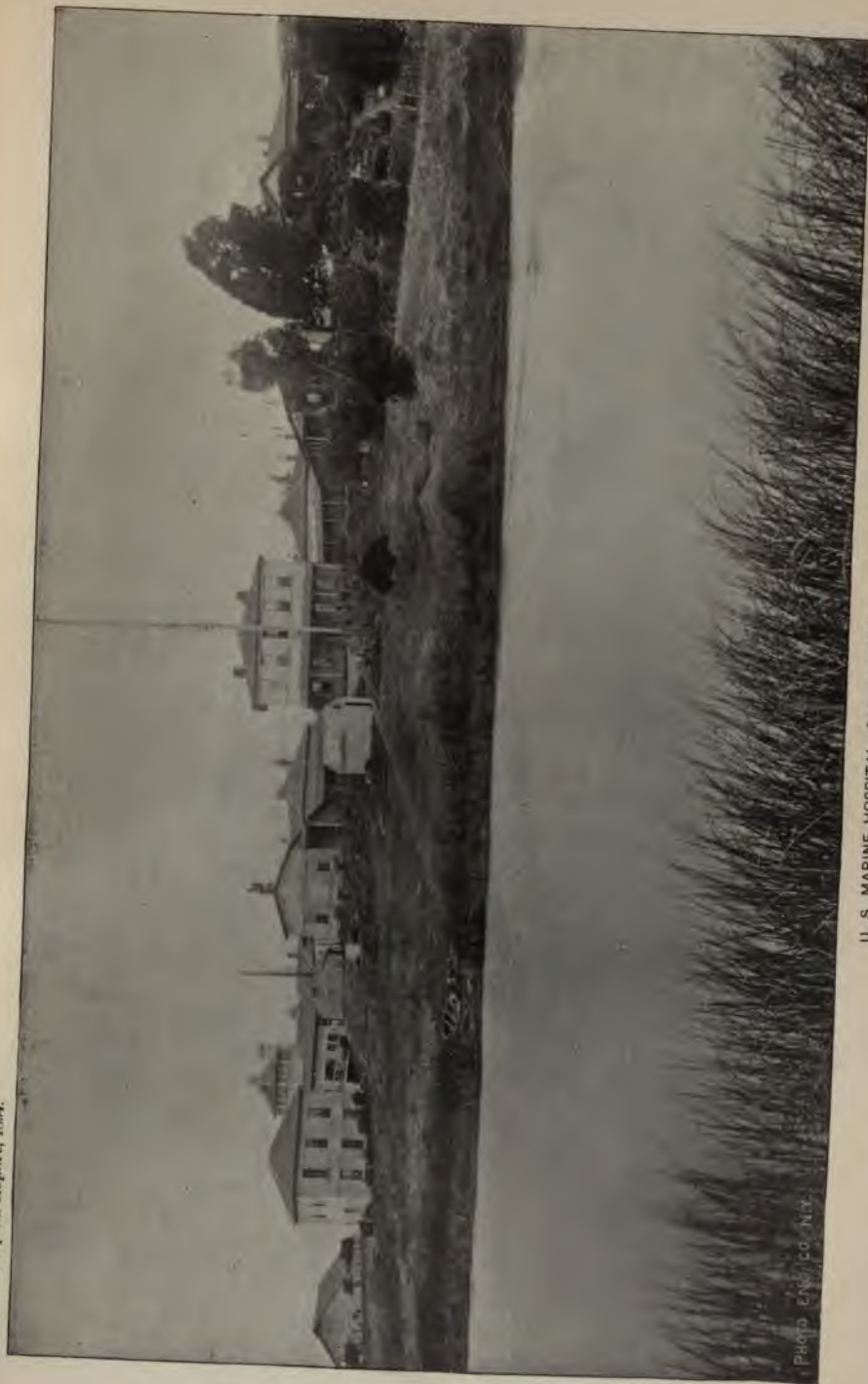


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U. S. MARINE HOSPITAL, SAN FRANCISCO, CALIFORNIA.





PHOTO ENG. CO. N.Y.

U. S. MARINE HOSPITAL, SAN FRANCISCO, CALIFORNIA. (GENERAL VIEW.)





*Albany, N. Y.*—The medical attendance to be furnished by an acting assistant surgeon; the Albany Hospital to furnish quarters, subsistence, nursing, and medicines, at \$1 per day.

*Alexandria, Va.*—The medical attendance to be furnished by an acting assistant surgeon; the Alexandria Infirmary to furnish quarters, subsistence, nursing, and medicines, at 90 cents per day.

*Apatachicola, Fla.*—Dr. J. D. Rush to furnish medical attendance and medicines, at \$30 per month; Martha Campbell to furnish quarters, subsistence, and nursing, at \$1 per day, and to provide for the burial of deceased patients, at \$12.50 each.

*Ashland, Wis.*—St. Joseph's Hospital to furnish quarters, subsistence, nursing, medical attendance, and medicines, at \$1 per day.

*Ashtabula, Ohio.*—The medical attendance to be furnished by an acting assistant surgeon; Mrs. Henry Whelpley to furnish quarters, subsistence, and nursing at \$1 per day; contagious diseases, \$1.50 per day; John Ducro & Sons to provide for the burial of deceased patients, at \$14 each. Patients requiring long-continued hospital treatment will be furnished transportation to the United States Marine Hospital at Detroit, Mich.

*Astoria, Oreg.*—The medical attendance to be furnished by an acting assistant surgeon; St. Mary's Hospital to furnish quarters, subsistence, nursing, and medicines, at \$1 per day.

*Baltimore, Md.*—Hospital patients to be cared for in the United States Marine Hospital; F. M. Denny to provide for the burial of deceased patients, at \$16.50 each.

*Bangor, Me.*—The medical attendance to be furnished by an acting assistant surgeon; John Foley to furnish quarters, subsistence, and nursing, at \$1 per day.

*Bath, Me.*—The medical attendance to be furnished by an acting assistant surgeon; Alpheus Dodge to furnish quarters, subsistence, and nursing, at 95 cents per day. Patients requiring long-continued hospital treatment will be furnished transportation to the United States Marine Hospital at Portland, Me.

*Belfast, Me.*—The medical attendance to be furnished by an acting assistant surgeon.

*Bismarck, N. Dak.*—The medical attendance to be furnished by an acting assistant surgeon; Lamborn Hospital to furnish quarters, subsistence, nursing, and medicines, at 90 cents per day.

*Boston, Mass.*—Hospital patients to be cared for in the United States Marine Hospital at Chelsea, Mass.; burial of deceased patients at the hospital cemetery; burial of foreign patients, at \$10 each.

*Bridgeport, Conn.*—Bridgeport Hospital to furnish quarters, subsistence, nursing, medical attendance, and medicines, at \$1 per day; Hawley, Wilmot & Reynolds to provide for the burial of deceased patients, at \$16 each.

*Brownsville, Tex.*—The medical attendance to be furnished by an acting assistant surgeon. Until other arrangements are made, \$1 per day will be allowed for the care of hospital patients.

*Brunswick, Ga.*—The medical attendance to be furnished by an acting assistant surgeon; T. Blount Bowen to furnish quarters, subsistence, and nursing, at 75 cents per day.

*Buffalo, N. Y.*—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; the Buffalo Hospital (Sisters of Charity) to furnish quarters, subsistence, nursing, and medicines, at 80 cents per day; contagious diseases at \$2 per day; and to provide for burial of deceased patients at \$10 each.

*Burlington, Iowa.*—The Mercy Hospital to furnish quarters, subsistence, medical attendance, nursing, and medicines, at 85 cents per day.

*Burlington, Vt.*—The Mary Fletcher Hospital to furnish quarters, subsistence, nursing, medical attendance, and medicines, at \$1 per day.

*Cairo, Ill.*—Hospital patients to be cared for in the United States Marine Hospital; L. E. Falconer to provide for the burial of deceased patients, at \$9 each.



*Cambridge, Md.*—The medical attendance to be furnished by an acting assistant surgeon; Charles J. Webb to furnish quarters, subsistence, and nursing, at 50 cents per day.

*Charleston, S. C.*—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; out-patients to be treated at the dispensary (Atlantic Wharf); St. Francis Xavier's Infirmary to furnish quarters, subsistence, nursing, and medicines, at 79 cents per day; contagious diseases, \$2 per day; and to provide for the burial of deceased patients, at \$10 each.

*Chattanooga, Tenn.*—The medical attendance to be furnished by an acting assistant surgeon; Hamilton County Hospital to furnish quarters, subsistence, nursing, and medicines, at 65 cents per day.

*Chicago, Ill.*—Hospital patients to be cared for in the United States Marine Hospital; H. Bartlett to provide for the burial of deceased patients, at \$17.50 each.

*Cincinnati, Ohio.*—Hospital patients to be cared for in the United States Marine Hospital; dispensary at the hospital, southeast corner of Third and Kilgour streets; John B. Habig to provide for the burial of deceased white patients, at \$16 each; colored patients, at \$17.50 each.

*Cleveland, Ohio.*—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; the Cleveland City Hospital Association to furnish quarters, subsistence, nursing, and medicines, in the United States Marine Hospital, under lease of September 21, 1875, at 64 cents per day. The hospital to be kept in repair by the association. Flynn, Abel & Froelk to furnish ambulance service, at \$2 for each patient, and to provide for the burial of deceased patients, at \$17 each.

*Corpus Christi, Tex.*—The medical attendance to be furnished by an acting assistant surgeon; James E. Ellis to furnish quarters, subsistence, and nursing, at \$1 per day.

*Darien, Ga.*—The medical attendance to be furnished by an acting assistant surgeon; patients requiring hospital treatment will be furnished transportation to Brunswick, Ga.

*Detroit, Mich.*—Hospital patients to be cared for in the United States Marine Hospital; out-patients to be treated at the dispensary, No. 90 Griswold street; Frank Gibbs & Co. to provide for the burial of deceased patients, at \$7.90 each.

*Dubuque, Iowa.*—The medical attendance to be furnished by an acting assistant surgeon; St. Joseph's Mercy Hospital to furnish ambulance service, quarters, subsistence, nursing, and medicines, at \$1 per day; M. M. Hoffman to provide for the burial of deceased patients, at \$14 each.

*Duluth, Minn.*—The medical attendance to be furnished by an acting assistant surgeon; St. Luke's Hospital to furnish quarters, subsistence, nursing, and medicines, at 85 cents per day; John W. Stewart to provide for the burial of deceased patients, at \$15 each.

*Edenton, N. C.*—R. Dillard, M. D., to furnish quarters, subsistence, nursing, medical attendance, and medicines, at \$2 per day. For out-patients \$1 will be allowed for each medical examination and 25 cents additional for each time medicine is furnished.

*Elizabeth City, N. C.*—The medical attendance to be furnished by an acting assistant surgeon.

*Ellsworth, Me.*—The medical attendance to be furnished by an acting assistant surgeon. Hospital care and treatment will be furnished only to patients who are unable to bear transportation to the United States Marine Hospital at Portland, Me.

*Erie, Pa.*—The medical attendance to be furnished by an acting assistant surgeon; Hamot Hospital Association to furnish quarters, subsistence, nursing, and medicines, at 85 cents per day. Care and treatment of cases of contagious diseases to be furnished by the health department of the city of Erie, at \$2.85 per day; W. J. Quinn to provide for the burial of deceased patients, at \$18 each.

*Escanaba, Mich.*—The medical attendance to be furnished by an acting assistant surgeon; Delta County Hospital to furnish quarters, subsistence, and nursing, at \$1 per day.

*Eureka, Cal.*—The medical attendance to be furnished by an acting assistant surgeon; Maria Anderson to furnish quarters, subsistence, nursing, and medicines, at 95 cents per day.

*Evansville, Ind.*—Hospital patients to be cared for in the United States Marine Hospital; R. Smith to provide for the burial of deceased patients, at \$22 each.

*Fernandina, Fla.*—The medical attendance to be furnished by an acting assistant surgeon; John H. Mills to furnish quarters, subsistence, and nursing, at \$1 per day; contagious diseases, at \$2 per day, and to provide for the burial of deceased patients, at \$15 each.

*Fredericksburg, Va.*—The medical attendance to be furnished by an acting assistant surgeon; Amelia Parrott to furnish quarters, subsistence, nursing, and medicines, at 90 cents per day; George Nosset to provide for the burial of deceased patients, at \$12.50 each.

*Gallipolis, Ohio.*—The medical attendance to be furnished by an acting assistant surgeon; Harriet J. Kinder to furnish quarters, subsistence, and nursing, at 75 cents per day, and to provide office quarters for the acting assistant surgeon, at \$10 per month; Hayward & Son to provide for the burial of deceased patients, at \$15 each.

*Galveston, Tex.*—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; St. Mary's Infirmary to furnish ambulance service, quarters, subsistence, nursing, and medicines, at \$1 per day; contagious diseases, at \$2 per day, and to provide for the burial of deceased patients, at \$10 each. Patients requiring long-continued hospital treatment will be furnished transportation to the United States Marine Hospital at New Orleans.

*Georgetown, D. C.*—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; out-patients to be treated at the dispensary, No. 3 B street SE., Washington; Providence Hospital, Washington, to furnish quarters, subsistence, nursing, interne attendance, and medicines, at 75 cents per day.

*Georgetown, S. C.*—The medical attendance to be furnished by an acting assistant surgeon; John J. Lang and Susan Dennison to furnish quarters, subsistence, and nursing, at \$1 per day; Joseph J. Dunmore to provide for the burial of deceased patients, at \$18 each.

*Gloucester, Mass.*—The medical attendance to be furnished by an acting assistant surgeon. Patients requiring hospital care and treatment to be furnished transportation to the United States Marine Hospital at Chelsea, Mass.

*Government Hospital for the Insane, District of Columbia.*—Under act of Congress, March 3, 1875, to furnish quarters, subsistence, nursing, medical attendance, and medicines, at \$4.50 per week, for each insane patient admitted upon the order of the Secretary of the Treasury.

*Grand Haven, Mich.*—The medical attendance to be furnished by an acting assistant surgeon; Nancy Palmer to furnish quarters, subsistence, and nursing, at \$1 per day.

*Green Bay, Wis.*—The medical attendance to be furnished by an acting assistant surgeon; St. Vincent Hospital to furnish quarters, subsistence, nursing, and medicines, at \$1 per day; contagious diseases, at \$3 per day.

*Hartford, Conn.*—The Hartford Hospital to furnish quarters, subsistence, nursing, medical attendance, and medicines, at \$1 per day; G. W. Woolley & Son to provide for the burial of deceased patients, at \$13 each.

*Jacksonville, Fla.*—The medical attendance to be furnished by an acting assistant surgeon; William H. Jones to furnish quarters, subsistence, and nursing, at 95 cents per day; Edward J. Gordon to provide for the burial of deceased patients, at \$12.50 each.

*Key West, Fla.*—Hospital patients to be cared for in the United States Marine Hospital; Bolio & Boza to provide for the burial of deceased patients, at \$8.50 each.

*La Crosse, Wis.*—The medical attendance to be furnished by an acting assistant surgeon; St. Francis Hospital to furnish quarters, subsistence, nursing, and medi-

cines, at \$1 per day; Theo. Mannstedt to provide for the burial of deceased patients, at \$20 each.

*Lewes, Del.*—The medical attendance to be furnished by an acting assistant surgeon; Levin D. Lynch to furnish quarters, subsistence, nursing, and medicines, at \$1 per day; Walter J. Poynter to provide for the burial of deceased patients, at \$14.50 each.

*Little Rock, Ark.*—The medical attendance to be furnished by an acting assistant surgeon; Little Rock Infirmary to furnish quarters, subsistence, nursing, and medicines, at \$1 per day; F. Baer to provide for the burial of deceased patients, at \$12 each.

*Louisville, Ky.*—Hospital patients to be cared for in the United States Marine Hospital; out-patients to be treated at the dispensary, 915 Jefferson street; Schoppenhorst Bros. to provide for the burial of deceased patients, at \$15 each.

*Ludington, Mich.*—The medical attendance to be furnished by an acting assistant surgeon; Hannibal D. Linsley to furnish quarters, subsistence, and nursing, at \$1 per day.

*Machias, Me.*—The medical attendance to be furnished by an acting assistant surgeon; Abiel E. Preble to furnish quarters, subsistence, and nursing, at 86 cents per day; L. H. Hanscom to provide for the burial of deceased patients, at \$15 each.

*Manistee, Mich.*—The medical attendance to be furnished by an acting assistant surgeon; Mercy Hospital to furnish quarters, subsistence, nursing, and medicines, at 90 cents per day.

*Marquette, Mich.*—The medical attendance to be furnished by an acting assistant surgeon; St. Mary's Hospital to furnish quarters, subsistence, and nursing, at \$1 per day, and to provide for the burial of deceased patients, at \$15 each.

*Marshfield, Oreg.*—The medical attendance to be furnished by an acting assistant surgeon; John Snyder to furnish quarters, subsistence, nursing, and medicines, at \$1.20 per day.

*Memphis, Tenn.*—Hospital patients to be cared for in the United States Marine Hospital; John Walsh to provide for the burial of deceased patients, at \$10 each.

*Michigan City, Ind.*—The medical attendance to be furnished by an acting assistant surgeon; seamen requiring hospital treatment must make application at the United States Marine Hospital at Chicago, Ill.

*Milwaukee, Wis.*—The medical attendance to be furnished by an acting assistant surgeon; St. Mary's Hospital to furnish quarters, subsistence, nursing, and medicines, at 80 cents per day; George L. Thomas to provide for the burial of deceased patients, at \$15 each. Chronic hospital patients to be furnished transportation to the United States Marine Hospital at Chicago, Ill.

*Mobile, Ala.*—Hospital patients to be cared for in the United States Marine Hospital; McKay & Roche to provide for the burial of deceased patients, at \$12.50 each.

*Nashville, Tenn.*—The medical attendance to be furnished by an acting assistant surgeon; Nashville City Hospital to furnish quarters, subsistence, nursing, and medicines, at 90 cents per day.

*New Bedford, Mass.*—The medical attendance to be furnished by an acting assistant surgeon; patients requiring hospital care and treatment, if able to bear transportation, will be sent to the United States Marine Hospital at Vineyard Haven.

*Newbern, N. C.*—The medical attendance to be furnished by an acting assistant surgeon; Susan A. Collins to furnish quarters, subsistence, and nursing, at 70 cents per day; J. A. Simpson to provide for the burial of deceased patients, at \$15 each.

*New Haven, Conn.*—The medical attendance to be furnished by an acting assistant surgeon; the New Haven General Hospital to furnish quarters, subsistence, nursing, and medicines, at \$1 per day, and to provide for the burial of deceased patients, at \$15 each; the New Haven board of health to furnish all necessary care and treatment in cases of any contagious disease, at \$3 per day.

*New London, Conn.*—The medical attendance to be furnished by an acting assistant surgeon; Mrs. J. G. Lynch to furnish quarters, subsistence, nursing, and medicines, at 75 cents per day; Caulkins & Prentis to provide for the burial of deceased patients, at \$16 each.

*New Orleans, La.*—Hospital patients to be cared for in the United States Marine Hospital; T. J. McMahan & Sons Co. to provide for the burial of deceased patients, at \$9 each.

*Newport, Ark.*—The medical attendance to be furnished by an acting assistant surgeon; Puss Watkins to furnish quarters, subsistence, and nursing, at \$1 per day.

*Newport, R. I.*—The medical attendance to be furnished by an acting assistant surgeon; the Newport Hospital to furnish quarters, subsistence, nursing, and medicines, at \$1 per day. Patients requiring long-continued hospital treatment will be furnished transportation to the Marine Hospital, Stapleton, Staten Island, New York.

*New York, N. Y.*—Hospital patients to be cared for in the Marine Hospital, Stapleton, Staten Island, New York; out-patients to be treated at the dispensary, near the New Barge Office, Battery; G. F. Schaefer, of Staten Island, to provide for the burial of deceased patients, at \$9 each.

*Norfolk, Va.*—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; St. Vincent Hospital to furnish quarters, subsistence, nursing, ambulance service, and medicines, at 83 cents per day; J. E. Edwards to provide for the burial of deceased patients, at \$10 each.

*Ogdensburg, N. Y.*—The medical attendance to be furnished by an acting assistant surgeon; the City Hospital to furnish quarters, subsistence, medicines, and nursing, at \$1.25 per day; L. McGillis to provide for the burial of deceased patients, at \$15 each.

*Oswego, N. Y.*—The medical attendance to be furnished by an acting assistant surgeon; the Oswego Hospital to furnish quarters, subsistence, nursing, and medicines, at \$1 per day.

*Pensacola, Fla.*—The medical attendance to be furnished by an acting assistant surgeon; R. W. Hargis to furnish quarters, subsistence, nursing, and medicines, at \$1 per day; S. B. Hutchinson & Co. to provide for the burial of deceased patients, at \$15 each. Patients requiring long-continued hospital treatment will be furnished transportation to the United States Marine Hospital at Mobile, Ala.

*Philadelphia, Pa.*—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; the German Hospital to furnish ambulance service, quarters, subsistence, nursing, medicines, and one interne, at \$1 per day; and to provide for the burial of deceased patients, at \$15 each.

*Pittsburg, Pa.*—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; out-patients to be treated at No. 96 Wood street; the Mercy Hospital to furnish quarters, subsistence, nursing, medicines, and a resident physician, at 94 cents per day; J. J. Giltinan to provide for the burial of deceased patients, at \$13 each. Care and treatment of contagious cases to be furnished by the Pittsburg Department of Public Safety, at \$2 per day.

*Port Huron, Mich.*—The medical attendance to be furnished by an acting assistant surgeon; "Hospital and Home" to furnish quarters, subsistence, and nursing, at \$1 per day. Patients requiring long-continued hospital treatment will be furnished transportation to the United States Marine Hospital at Detroit; J. W. Kelly to provide for the burial of deceased patients, at \$8 each.

*Portland, Me.*—Hospital patients to be cared for in the United States Marine Hospital; Ilsley Bros. to provide for the burial of deceased patients, at \$8.50 each.

*Portland, Oreg.*—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; out-patients to be treated at the dispensary, room 21, Union Block, corner of First and Stark streets; St. Vincent's Hospital to furnish quarters, subsistence, nursing, and medicines, at 60 cents per day; contagious

diseases, at \$2 per day; F. S. Dunning to provide for the burial of deceased patients, at \$10 each.

*Portsmouth, N. H.*—The medical attendance to be furnished by an acting assistant surgeon; Cottage Hospital to furnish quarters, subsistence, and nursing, at \$1 per day.

*Port Tampa, Fla.*—The medical attendance to be furnished by an acting assistant surgeon.

*Port Townsend, Wash.*—Hospital patients to be cared for in the United States Marine Hospital; George E. Starrett to provide for the burial of deceased patients, at \$16 each.

*Providence, R. I.*—The Rhode Island Hospital to furnish quarters, subsistence, nursing, medical attendance, and medicines, at \$1 per day, and to provide for the burial of deceased patients, at \$12 each. Patients requiring long-continued hospital treatment will be furnished transportation to the United States Marine Hospital at Chelsea (port of Boston).

*Richmond, Va.*—The medical attendance to be furnished by an acting assistant surgeon; out-patients to be treated at the Marine-Hospital Office, custom-house building; "Retreat for the Sick" Hospital to furnish quarters, subsistence, nursing, and medicines, at \$1 per day.

*Rockland, Me.*—The medical attendance to be furnished by an acting assistant surgeon; John S. Ranlett to furnish quarters, subsistence, and nursing, at \$1 per day; E. A. Burpee to provide for the burial of deceased patients, at \$14 each. Patients requiring long-continued hospital treatment to be furnished transportation to the United States Marine Hospital at Portland, Me.

*Rome, Ga.*—The medical attendance to be furnished by an acting assistant surgeon; the Martha Battey Hospital to furnish quarters, subsistence, and nursing, at \$1 per day.

*Saginaw, Mich.*—The medical attendance to be furnished by an acting assistant surgeon; Saginaw Hospital to furnish quarters, subsistence, nursing, and medicines, at 65 cents per day. Patients requiring long-continued hospital treatment to be furnished transportation to the United States Marine Hospital at Detroit, Mich.

*St. Louis, Mo.*—Hospital patients to be cared for in the United States Marine Hospital; John Hahn to provide for the burial of deceased patients, at \$12.50 each.

*St. Paul, Minn.*—The medical attendance to be furnished by an acting assistant surgeon; St. Luke's Hospital to furnish quarters, subsistence, nursing, and medicines, at \$1 per day, and to provide for the burial of deceased patients, at \$8 each.

*San Diego, Cal.*—The medical attendance to be furnished by a medical officer of the Marine-Hospital Service; St. Joseph's Hospital to furnish quarters, subsistence, nursing, and ambulance service, at 69 cents per day, and to provide for the burial of deceased patients, at \$11 each.

*Sandusky, Ohio.*—The medical attendance to be furnished by an acting assistant surgeon; the Good Samaritan Hospital to furnish quarters, subsistence, and nursing, at \$1 per day.

*San Francisco, Cal.*—Hospital patients to be cared for in the United States Marine Hospital; out-patients to be treated at the Marine Hospital Office, rooms 1 to 3, Appraiser's building; burial of deceased patients at the hospital cemetery; burial of foreign seamen, at \$10 each.

*San Pedro, Cal.*—Randolph W. Hill, M. D., to furnish quarters, subsistence, nursing, medical attendance, and medicines, at 90 cents per day; contagious diseases, at \$1.50 per day, and to provide for the burial of deceased patients, at \$7 each.

*Sault Ste. Marie, Mich.*—The medical attendance to be furnished by an acting assistant surgeon; Mrs. Mary J. Walker to furnish quarters, subsistence, and nursing, at 75 cents per day; J. Vanderhook to provide for the burial of deceased patients, at \$5 each.

*Savannah, Ga.*—The medical attendance to be furnished by a medical officer of the *line-Hospital Service*; St. Joseph's Infirmary to furnish quarters, subsistence,

nursing, and medicines, at \$1 per day; Joseph Goette to provide for the burial of deceased patients, at \$7 each.

*Seattle, Wash.*—The medical attendance to be furnished by an acting assistant surgeon; Providence Hospital to furnish quarters, subsistence, nursing, and medicines, at 75 cents per day; the Cross Undertaking Company to provide for the burial of deceased patients, at \$12.40 each.

*Shreveport, La.*—The medical attendance to be furnished by an acting assistant surgeon; out-patients to be treated at the Marine Hospital Office; Shreveport Charity Hospital to furnish quarters, subsistence, nursing, and medicines, at \$1 per day; W. W. Waring to provide for the burial of deceased patients, at \$14 each.

*Solomons, Md.*—The medical attendance to be furnished by an acting assistant surgeon; W. H. Files to furnish subsistence, nursing, fuel, and lights, at \$1 per day; T. M. White to provide for the burial of deceased patients, at \$7.50 each; patients requiring long-continued hospital treatment to be furnished transportation to the United States Marine Hospital at Baltimore, Md.

*Superior, Wis.*—The medical attendance to be furnished by an acting assistant surgeon; St. Francis Hospital to furnish quarters, subsistence, nursing, and medicines, at 90 cents per day.

*Tacoma, Wash.*—The medical attendance to be furnished by an acting assistant surgeon; Fanny C. Paddock Hospital to furnish quarters, subsistence, nursing, and medicines, at 55 cents per day.

*Tappahannock, Va.*—W. G. Jeffries, M. D., to furnish quarters, subsistence, nursing, medical attendance, and medicines, at Tappahannock; Dr. W. J. Newbill, at Carters Creek, and Dr. W. S. Christian, at Urbana, each at \$1.50 per day. Patients requiring long-continued hospital treatment will be transferred to the United States Marine Hospital at Baltimore, Md.

*Toledo, Ohio.*—The medical attendance to be furnished by an acting assistant surgeon; St. Vincent Hospital to furnish quarters, subsistence, nursing, and medicines, at 80 cents per day; contagious diseases, \$2 per day; and to provide for the burial of deceased patients, at \$15 each.

*Tuckerton, N. J.*—The medical attendance to be furnished by an acting assistant surgeon.

*Vicksburg, Miss.*—The medical attendance to be furnished by an acting assistant surgeon; the Vicksburg City Hospital to furnish quarters, subsistence, nursing, and medicines, at \$1 per day; contagious diseases, at \$3 per day.

*Vineyard Haven, Mass.*—Hospital patients to be cared for in the United States Marine Hospital; M. C. Vincent to provide for the burial of deceased patients, at \$17 each.

*Wheeling, W. Va.*—The medical attendance to be furnished by an acting assistant surgeon; the Wheeling Hospital to furnish quarters, subsistence, nursing, and medicines, at 75 cents per day.

*Wilmington, N. C.*—Hospital patients to be cared for in the United States Marine Hospital; Walter E. Yopp to provide for the burial of deceased patients, at \$11.50 each.

At the following-named ports hospital or other relief will be furnished only under the provisions of the regulations for the Marine Hospital Service as to third-class stations:

Barnstable, Mass.; Beaufort, N. C.; Beaufort, S. C.; Castine, Me.; Cedar Keys, Fla.; Chatham, Mass.; Dennis, Mass.; Eastport, Me.; Edgartown, Mass.; Hyannis, Mass.; Newport News, Va.; Perth Amboy, N. J.; Provincetown, Mass.; Sag Harbor, N. Y.; Salem, Mass.; Sitka, Alaska; Somers Point, N. J.; Waldoboro, Me.; Wilmington, Del.; Wiscasset, Me.

The rate at ports not specifically provided for by this circular will, in each special case, be fixed by the Department, upon the recommendation of the proper officer, in accordance with the regulations.

The rate of charge for seamen from vessels of the Navy and Coast Survey, admitted to hospital under the provisions of the regulations, and of foreign seamen admitted under the act of March 3, 1875, is hereby fixed at the uniform rate of \$1 per diem.

At all other ports not otherwise specified the dispensary is located at the custom-house or marine hospital.

#### PURVEYING DIVISION.

The report of the medical officer in charge of the purveying division shows that 347 requisitions for medical and other supplies have been filled to meet the wants of 19 United States marine hospitals and 42 other relief stations of the Service.

Eleven national quarantine stations, 3 United States revenue cutters, and the immigration hospital at Ellis Island, New York Harbor, have received their medical supplies through this division.

The following is a summary of the cost of the various supplies purchased for issue during the year:

Medical supplies.....	\$15, 135. 32
Hospital stores .....	7, 113. 08
Hospital sundries .....	7, 775. 69
Surgical instruments and appliances.....	4, 492. 47
Bedding and clothing .....	6, 079. 03
Medical books and journals.....	866. 42

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## FINANCIAL STATEMENT.

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## FINANCIAL STATEMENT.

### RECEIPTS AND EXPENDITURES, UNITED STATES MARINE-HOSPITAL SERVICE, FOR THE FISCAL YEAR ENDED JUNE 30, 1894.

The balance available at the commencement of the fiscal year was \$107,162.18, and the receipts from all sources were \$550,909.98.

The expenditures were \$586,741.75, leaving on hand at the close of the fiscal year a balance of \$71,330.41.

#### SUMMARY.

Balance July 1, 1893.....	\$107, 162. 18
Receipts tonnage tax collected.....	537, 798. 19
Repayment for care and treatment of foreign seamen, etc.....	13, 111. 79
Total available during fiscal year.....	658, 072. 16
Expenditures.....	586, 741. 75
Balance June 30, 1894.....	71, 330. 41

#### STATEMENT BY APPROPRIATIONS.

##### *Quarantine service, 1894.*

Amount appropriated:	
Act of March 3, 1893.....	\$50, 000. 00
Act of August 18, 1893.....	40, 000. 00
Repayment, care of foreign seamen, etc.....	271. 13
Total available during fiscal year.....	90, 271. 13
Expenditures.....	90, 271. 13
No unexpended balance.	

In addition to the above \$17,969.13 has been expended at the several quarantine stations from the appropriation for preventing the spread of epidemic diseases, out of an allotment of \$20,000, under date of April 4, 1894, for this purpose; also outstanding bills of \$1,117.70 in course of adjustment.

*Summary of expenditures on account of the quarantine service, fiscal year ended June 30, 1894.*

Station.	Payment from the appropriation "Quarantine service, 1894."	Payment from the appropriation "Preventing the spread of epidemic diseases."	Total.
Cape Charles.....	\$16, 407. 85	\$3, 605. 00	\$20, 012. 85
Delaware Breakwater.....	19, 026. 88	1, 434. 97	20, 461. 85
Gulf.....	13, 728. 52	2, 778. 29	16, 506. 81
Key West.....	8, 131. 22	6, 931. 40	15, 062. 62
Port Townsend.....	3, 802. 60	146. 82	3, 949. 42
San Diego.....	4, 672. 07	666. 55	5, 338. 62
San Francisco.....	14, 406. 85	586. 21	14, 993. 06
South Atlantic.....	9, 859. 39	1, 819. 89	11, 679. 28
Miscellaneous.....	235. 75		235. 75
Total.....	90, 271. 13	17, 969. 13	108, 240. 26
Outstanding bills in course of adjustment.....			1, 117. 70
Grand total.....			109, 357. 96

## MARINE-HOSPITAL SERVICE.

*Preventing the spread of epidemic diseases.*

Balance, July 1, 1893.....	\$925, 985. 45
Repayment, care of foreign seamen.....	20. 00

Total available during fiscal year..... 925, 985. 45

**Expenditures:**

Foreign medical service, salaries, traveling expenses, etc.	\$47, 725. 13
Sanitary inspectors in United States, salaries, traveling expenses, etc.....	46, 429. 03
Reedy Island, Delaware, pier. disinfecting apparatus, hospital building, etc.....	66, 807. 06
Delaware Breakwater; disinfecting plant, stewards' quarters, etc.....	16, 829. 72
Cape Charles, Va., storeroom and kitchen, detention barracks, etc.....	11, 200. 00
South Atlantic, repairs to ballast wharf, steam launch, etc.....	8, 753. 41
Gulf, sulphur furnace, etc., and floating steamer <i>Welch</i> .	3, 906. 40
San Diego, Cal., naphtha launch and laundry.....	6, 183. 10
San Francisco, Cal., barracks building, repairs to <i>Omaha</i> , new fence, etc.....	5, 177. 79
Beaufort, S. C., (sanitary relief sea islands).....	5, 784. 33
Account yellow-fever epidemic—	
Brunswick, Ga.....	72, 501. 91
Conquests Camp.....	254. 21
Fernandina, Fla.....	833. 75
Jessup, Ga.....	1, 995. 45
Savannah, Ga.....	2, 448. 97
Brunswick, Ga., account quarantine station.....	9, 412. 27
Quarantine service, 1894.....	17, 969. 13
	<u>324, 211. 66</u>
Balance June 30, 1894.....	601, 773. 79

*Appropriations for quarantine stations, act August 1, 1888.*

Station.	Balance July 1, 1893.	Expenditures during fiscal year.	Balance June 30, 1894.
Cape Charles.....	\$35 676. 21	\$19, 587. 36	\$16, 088. 85
Delaware Breakwater.....	2, 988. 54	a 1, 255. 96	1, 732. 58
Key West.....	20, 309. 11	7, 687. 79	12, 621. 32
Port Townsend.....	51, 145. 72	38, 151. 73	12, 993. 99

a Amount carried to the surplus fund of the Treasury.

*Appropriations for quarantine stations, act August 1, 1888, and August 5, 1892.*

South Atlantic, balance July 1, 1893.....	\$7, 041. 89
Expended to June 30, 1894.....	6, 918. 73
Balance June 30, 1894.....	<u>123. 16</u>

*Appropriations for quarantine stations, act March 3, 1891, and August 5, 1892.*

Gulf, balance July 1, 1893.....	\$8, 518. 27
Expended to June 30, 1894.....	7, 467. 75
Balance June 30, 1894.....	<u>1, 050. 52</u>

## MARINE-HOSPITAL SERVICE.

45

*San Francisco quarantine, completing station, etc., act August 5, 1892.*

Balance June 30, 1893 .....	\$16,089.80
Expended to June 30, 1894 .....	15,956.45
Balance June 30, 1894 .....	132.85

*Chesapeake Bay supplemental station, act March 3, 1893.*

Balance June 30, 1893 .....	\$7,000.00
Expended to June 30, 1894 (examining title) .....	65.00
Balance June 30, 1894 .....	6,935.00

*San Francisco, fumigating steamer.*

Balance June 30, 1893 .....	\$1,016.32
Expended to June 30, 1894 .....	496.75
Balance June 30, 1894 .....	519.57

*Key West quarantine, disinfecting machinery.*

Balance June 30, 1893 .....	\$900.40
Expended to June 30, 1894 .....	
Balance June 30, 1894 .....	900.40



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**REPORTS OF FATAL CASES, WITH NECROPSIES.**

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## REPORTS OF FATAL CASES, WITH NECROPSIES.

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Following are the reports of fatal cases, together with necropsies, received from the several medical officers during the fiscal year:

### INFLUENZA—BRONCHO-PNEUMONIA.

B. S.; aged 37 years; nativity, New York; admitted to marine ward St. Francis Xavier Infirmary, Charleston, S. C., May 1, 1894; died June 5, 1894.

*History.*—Was in hospital in Norfolk during April with headache, coryza, fever, and cough. Four days before admission the same symptoms returned. When admitted there was fever, cough, and very acute bronchitis, loud sibilant rales being heard over every portion of both lungs. Fever of an irregular, remittent type continued throughout, and symptoms were not in any way influenced by treatment. During the last week of life the sputum became more serous in character and occasionally blood stained. The cough became uncontrollable and distressing, and dyspnoea extreme, death ensuing from pulmonary oedema.

*Necropsy.*—There was no indication of disease in any organ except the lungs. The two lungs were quite similar in appearance. There were a few recent pleuritic adhesions; the bronchial tubes were universally and intensely inflamed and contained a blood-stained serous exudate. Every portion of lung tissue crepitated on pressure, and exuded serum copiously on section. Scattered through the lungs were areas of splenization. The tissue of these areas was almost black in color and slightly firmer than the surrounding lung.

### SCURVY.

W. H.; aged 52 years; nativity, England; admitted to United States Marine Hospital at San Francisco September 12; died September 13, 1893, at 3 o'clock p. m.

*History.*—On admittance patient complained of poor appetite, progressive emaciation, extreme weakness, discoloration of skin, and ulcerated and bleeding mouth. He had been on a long sea voyage, and although unwell for quite a long period he became worse about three weeks ago.

*Inspection:* Patient very much emaciated and anæmic. Ankles and legs were oedematous. Subcutaneous capillary hemorrhages on dorsum of hands, forearms, arms, legs, and thighs. Numerous ulcers of mouth. Gums were somewhat spongy in appearance.

*Palpation:* Apex beat of heart could not be felt.

*Percussion:* Area of hepatic dullness much diminished.

*Auscultation:* Breathing was broncho-vesicular in character. Few soft, bubbling rales scattered over lungs.

*Heart's action* very feeble. No valvular murmur.

*Necropsy.*—Lungs were both very dark in color, congested, and very oedematous. Heart was very small; weight, 140 grams; valves competent; coronary veins vari-



cose. Liver was quite small; passive congestion present. Spleen weighed 50 grams and was quite resistant on section. Stomach partially filled with milk. Passive congestion of walls. Kidneys appeared normal. All the viscera were very pale. Abdominal muscles very dark in color.

#### ENTERIC FEVER.

M. S.; aged 21 years; nativity, Norway; admitted to marine ward St. Vincent's Hospital, Norfolk, Va., April 2; died April 11, 1894.

*History.*—Patient gave history of having been sick for a week previous to admission. He was found suffering with high fever,  $104^{\circ}$  to  $105^{\circ}$  in the morning and  $105^{\circ}$  to  $106.5^{\circ}$  in the evening. The temperature continued high throughout his illness, and baths had only a slight effect upon it, reducing it  $.5^{\circ}$  to  $1^{\circ}$ . Tongue was dry and furred; diarrhœa was present, having three to seven stools in twenty-four hours. Tympanitis soon became marked. Epistaxis was rather profuse. The rash was very much like that of typhus fever, the spots being numerous, scattered over chest, abdomen, arms, and legs, and of a dusky hue. Delirium occurred early in the disease and was of a severe type; the baths had a beneficial effect upon it, but it was not lasting.

*Necropsy (eleven hours after death).*—External appearances: Body fairly well nourished; rigor mortis slight and post-mortem lividity not marked. Thoracic cavity: Lungs were congested and presented evidences of bronchitis; pleura normal; pericardium and heart healthy. Abdominal cavity: Liver was much enlarged and congested; spleen was several times its normal size and softened; Peyer's patches were thickened, infiltrated, and some were ulcerated; there was marked disproportion between the symptoms during life and the intestinal lesions; the mesenteric glands were much enlarged; kidneys enlarged and congested; pancreas normal.

#### DYSENTERY.

##### CASE 1.

J. M.; aged 39 years; nativity, Norway; admitted to United States Marine Hospital, New Orleans, La., November 27; died December 9, 1893.

*History.*—Five days previous to admission to hospital the patient was first troubled with diarrhœa, the stools varying in number from six to twelve daily, bloody in character, and attended with considerable straining, tenesmus, and marked abdominal pain. The treatment consisted chiefly in the administration of intestinal antiseptics, astringents with opium, and daily flushing of the lower bowel. Hiccoughing was a very constant and depressing symptom during the last three days of his life, from which only temporary relief could be obtained.

*Necropsy (thirteen hours after death).*—Body that of a muscular, well-nourished young white man; post-mortem lividity slight; rigor mortis present in upper extremities, absent in lower; heart, weight 300 grams, slightly fatty, parietal and visceral layers of pericardium in contact and adherent throughout. Lungs tubercular; large cavity in left apex and numerous pleuritic adhesion on both sides; weight, right lung, 690 grams; left lung, 740 grams. Spleen soft, flabby, and very small; weight, 80 grams. Small intestine near the ilio-cæcal valve inflamed. Large intestine ulcerated throughout; descending colon dark in color, softened, and almost necrotic; perforation about 3 cm. in length was found in the sigmoid flexure, but, owing to adhesions to the pelvic wall, there was no escape of the intestinal contents. The liver was enlarged and was the seat of numerous abscesses, some of them as large as a hickory nut; weight, 2,140 grams. Gall bladder nearly empty. Left kidney, weight, 160 grams; right kidney, weight, 150 grams.

MASS. HOSP. SER.

## CASE 2.

S. W.; aged 53 years; nativity, New York; admitted to United States Marine Hospital, Vineyard Haven, Mass., September 9; died September 23, 1893.

*History.*—When admitted had offensive, bloody stools, about fifteen a day. Under treatment the amount of blood diminished, but the stools became more frequent, and the patient died on the following day.

*Necropsy (eighteen hours after death).*—External appearances: Post-mortem lividity slight; rigor mortis marked; body well nourished and pupils contracted. Thoracic cavity: Heart and pericardium normal; lungs and pleura healthy. Abdominal cavity: All the abdominal viscera were healthy except the large intestines. The walls of the rectum, sigmoid flexure, and descending colon were thickened, congested, and presented evidences of a croupous inflammation, with numerous patches of ulceration.

## CASE 3.

C. McC. (colored); aged 30 years; nativity, Mississippi; admitted to the United States Marine Hospital, Memphis, Tenn., September 14; died September 27, 1893.

*History.*—Upon admission to the hospital this patient gave a history of having been sick for nearly a week with diarrhœa of dysenteric form. He was then having frequent bloody stools, with tenesmus, and was suffering from constant pain in the belly, with tenderness on pressure. His case did not seem worse than some others which end in recovery, but none of the methods of treatment usually effective had any power to check his disease, although some of the symptoms, particularly the discharge of blood from the bowels, were alleviated. There was irregular, slight fever at first, which was absent in the last few days of life.

*Necropsy (two hours after death).*—Rigor mortis was absent. The pupils were moderately contracted. The chest was not opened. The abdomen was opened and the liver was removed. It weighed 1,885 grams and was of a little harder consistence than ordinary, appearing to have some excess of connective tissue in its structure. The right lobe of the liver was adherent to the abdominal wall near its lower border and close to the falciform ligament. The adhesions were old and firm, evidently the result of some former perihepatitis. Some adhesions were also present between this lobe of the liver and the hepatic flexure of the colon, and apparently both recent and former inflammation of the peritoneum had existed at this spot. The colon was congested and soggy from cæcum to sigmoid flexure, and was especially diseased at the hepatic flexure. It was cut across just below the sigmoid portion, through a part that seemed quite healthy, and was removed from the body for examination. The mucous membrane was found to be congested and softened, the condition being worse in patches and slightly better in the descending than in the ascending colon. No conspicuous ulceration was found. The small intestine was nearly empty, and the belly before opening was quite shrunken. The presence of the old peritoneal adhesions about the hepatic flexure of the colon make it very probable that the attack of dysentery which caused death in this case was secondary to an attack had a considerable time previously, which may have been one cause of its fatality.

## CASE 4.

S. M.; aged 23 years; nativity, Mississippi; admitted to the United States Marine Hospital, New Orleans, La., December 22, 1893; died January 6, 1894.

*History.*—The patient stated that he had suffered severely from diarrhœa for three days previous to his admission to hospital, the stools numbering from six to ten a day, tinged with blood and attended with considerable straining. His condition improved under the use of salol by mouth and copious rectal injections of boracic acid solution; and on the eighth day from his admission to hospital the number of

stools were reduced to two per day, unmixed with blood, unattended by straining, and partially formed. Suddenly, however, without apparent cause, the diarrhoea returned, the stools became lenteric in character, but contained no blood, abdominal pain was intense, vomiting constant, great prostration and delirium at night.

*Necropsy (seventeen hours after death).*—Body that of a much emaciated young negro man; rigor marked. Heart normal; ante-mortem clots in both ventricles; weight, 240 grams. Lungs grayish-white in color and apparently bloodless; very firm old pleuritic adhesions on both sides; weight of right lung, 340 grams; of left, 280 grams. Small intestine: Ileum, inflamed and lower portion denuded of its mucous membrane. Large intestine considerably thickened in region of the sigmoid flexure and ulcerated from ileocaecal valve to rectum; its wall was softened, of a dark purplish color, and apparently almost gangrenous in spots. Kidneys pale; weight of right, 220 grams; of left, 230 grams. Spleen normal; weight, 180 grams.

#### CASE 5.

W. M.; aged 20 years; nativity, Virginia; admitted to the United States Marine Hospital, New Orleans, La., April 5; died April 14, 1894.

*History.*—On admission patient stated that he had been suffering from diarrhoea for the past week, pain in abdomen, tenesmus, poor appetite, but said he had passed no blood from his bowels.

*Necropsy (twenty-three hours after death).*—Rigor mortis well marked. Body that of a poorly nourished negro lad, somewhat emaciated. Heart filled with large ante-mortem clots in both cavities, also post-mortem clots, pale in color and somewhat flabby; valves normal; weight, 395 grams; veins engorged; pericardial sac normal; aorta normal. Lungs: Right, normal, weight, 410 grams; left, normal, weight, 390 grams. Pleural cavities normal; contained no adhesions. Peritoneum: Omentum dark and congested. Small intestine dark, congested (venous). Large intestine ulcerated throughout, almost necrotic. Rectum ulcerated and slightly prolapsed. Liver normal, adherent to diaphragm on upper front surface, showing the seat of an old localized peritonitis; color normal; weight, 2,460 grams. Gall bladder and ducts partially distended. Kidneys: Left, 200 grams in weight, normal; right, 200 grams in weight, normal. Spleen, weight, 230 grams, normal.

#### CASE 6.

B. B. (colored); aged 25 years; nativity, Mississippi; admitted to the United States Marine Hospital, Memphis, Tenn., December 4; died December 16, 1893.

*History.*—At the time of admission the patient gave a history of having been seized with dysentery somewhat abruptly eight days before. He was having frequent bloody stools, with tenesmus, considerable fever, and much pain and tenderness in the lower part of the belly. The case was a very bad one from the first and the patient very hard to manage, and no treatment proved of any avail. The fever subsided a few days before death and the stools lost their dysenteric character, although they continued to be very frequent.

*Necropsy (two hours after death).*—No post-mortem lividity. Rigor mortis absent. General nourishment, good. Pupils dilated. Sclerotics tinged greenish yellow. The heart weighed 240 grams. The pericardial sac was healthy, and the heart was normal in every respect. The left lung weighed 220 grams and the right 249 grams; both were healthy, and the pleural cavities were entirely free from adhesions. In the abdominal cavity localized peritonitis existed about the caecum, with adhesions formed of newly deposited lymph, and there were slight signs of the same about the sigmoid flexure. No general peritonitis was present. The small intestine was congested. The large intestine was greatly inflamed and softened, particularly the caecum and the transverse colon. Perforation of the caecum had evidently taken place, the effect being limited by the adhesions present, as the caecum was glued

down by them in the iliac fossa. The vermiform appendix showed congestion. The large intestine was so rotten in the parts especially mentioned above as to pull apart in the attempt to remove it from the body. No perforation of the sigmoid portion had taken place, but lymph was deposited where the small intestine came in contact with it. The liver was studded with minute abscesses, between a pin's head and a pea in size. Their number might be estimated at a hundred, evenly distributed from surface to center. The liver was of normal color; weight, 2,070 grams. The gall bladder was completely empty. The left kidney weighed 190 grams; the right, 155 grams. Both were normal in appearance.

## CASE 7.

J. R.; aged 25 years; nativity, England; admitted to the United States Marine Hospital, San Francisco, Cal., April 3; died April 4, 1894, at 8.45 p. m.

*History.*—Patient on admittance complained of frequent and watery stools, mixed with red blood. He presented a picture of extreme prostration; the heart sounds were inaudible and pulse imperceptible. Patient was employed on a vessel that runs to Panama, and the disease began at the time of leaving that port. He failed rapidly; at 5 o'clock, April 4, developing a maniacal delirium, with succeeding collapse from which he could not be roused.

*Necropsy (fourteen hours after death).*—Rigor mortis and post-mortem lividity. The thoracic viscera, excepting the ventricles of the heart, which contained large ante-mortem clots, appeared normal. The spleen, liver, kidneys, and bladder were healthy. The stomach was in a condition of inflammatory congestion. The lower part of the ileum contained many necrotic areas and a small perforation near the ileocaecal valve. Colon: The mucous and submucous coats and in some spots the muscular coat were riddled with sloughing ulcers, with here and there islands of thickened and infiltrated tissue intervening.

## INTERMITTENT MALARIAL FEVER—CONGESTIVE TYPE.

W. W. M.; aged 49 years; nativity, Maine; admitted to the United States Marine Hospital, Boston, Mass., August 14, 1893, suffering from malarial fever. He stated that he had been having two chills each day for a week or more. Died August 16, 1893.

*Necropsy (twenty-one hours after death).*—Body of medium size, white, male, emaciated, and skin pale. No cicatrices observed. Post-mortem lividity on dependent parts of body. Rigor mortis marked. Pericardial sac contained normal quantity of fluid. Heart in systole; its valves pale, flabby, and apparently stretched, owing to heart's having ceased to beat while in systole; weight of heart, 350 grams. Larynx and trachea were slightly congested, and had adhering to their mucous surfaces a small quantity of viscid mucus. Pleura was free from adhesions to lungs. Both lungs were congested, and posterior inferior portions of both were cedematous. Weight of lungs: Left, 950 grams; right, 860 grams. Peritoneum apparently congested. Tongue coated with brownish-white fur. Stomach, post-mortem ecchymoses. Intestines apparently normal. Liver enlarged and of dark, smoky glass or slate color; its tissues soft and pulpy. Weight of organ, 2,120 grams. Gall bladder contained 140 cc. thick, dark fluid. Pancreas weighed 160 grams. Kidneys both lobulated; capsule stripped with difficulty, tearing instead of peeling. Line between cortical and medullary substance indistinct. The kidneys were of equal weight, viz, 180 grams. Urinary bladder distended and full of fluid. Spleen so soft and pulpy that it could not be wholly removed from body; weight, 590 grams approximately. Head and scalp normal in appearance. The pia mater was inflamed. Brain small and of characteristic peculiar leaden color seen in persons dead from profound malarial poisoning. Weight of brain, 1,280 grams.

## REMITTENT MALARIAL FEVER.

T. T.; aged 24 years; nativity, Norway; admitted to the United States Marine Hospital, Wilmington, N. C., October 10; died November 25, 1893.

*History.*—He was suffering from remittent malarial fever of a severe type. After convalescence began he complained occasionally of headache, and less frequently of pain in the region of the stomach. From the 18th to the 23d of November he was attacked each day, about 2 o'clock p. m., with pain in the head. He was better the next two days; was free from pain and in good spirits. On November 25, at 5 o'clock p. m., he suddenly fell forward from his seat and died within a few seconds.

*Necropsy.*—A very large, tall man. Post-mortem lividity well marked; rigor mortis moderate; general nourishment poor; pupils dilated. The heart was normal, but pale, weak, and flabby, and stopped in systole; all the valves were competent. The lungs were congested; the left weighed 780 grams and the right 990 grams. The caliber of the transverse colon was very small. The liver weighed 2,820 grams, very large and congested. The anterior border of the right lobe was very black. The kidneys weighed—left, 280 grams; right, 230 grams. They were more highly congested than any of the internal organs. The spleen was very large and highly congested. It weighed 980 grams. The brain was normal; weighed 1,600 grams; its vessels were engorged.

## MALARIAL FEVER—CONGESTIVE TYPE.

W. F. J. (white); aged 42 years; nativity, Massachusetts; admitted to the United States Marine Hospital, Boston, August 10, 1893, suffering from malarial poisoning of congestive type. He was partially unconscious when admitted, passing feces and urine involuntarily. Died August 11, 1893.

*Necropsy (thirteen hours after death).*—Body of medium size, male, slightly built, emaciated; rigor mortis marked; post-mortem lividity on dependent portions of body. Heart in systole; its valves pale and flabby; weight, 340 grams. Larynx and trachea covered with viscid mucus and somewhat inflamed. Both lungs in state of hypostatic hyperæmia in posterior parts, otherwise normal. Left weighed 500 grams, right, 640 grams. *Pluræ* normal. Stomach and intestines normal. Liver enlarged and congested; weight, 2,170 grams. Gall bladder dilated and full of thick, viscid bile. Left kidney apparently normal; weight, 180 grams. Right kidney lobulated, enlarged; capsule torn off, as it could not be separated; line between cortical and medullary substance poorly marked. Surface of organ covered with cysts, ranging from size of a pea to that of a filbert. Organ weighed 200 grams. Spleen soft, pulpy, and three times normal size; its substance easily torn; weight, 650 grams. Scalp and calvarium normal. Weight of brain, 1,475 grams. *Pia mater* inflamed at convexities. Meningitis of convexities.

## ERYSIPELAS.

C. P.; aged 50 years; nativity, Pennsylvania; admitted to the marine ward of the German Hospital at Philadelphia, January 1, 1894, in an exhausted condition and was almost totally blind and deaf, suffering from an acute conjunctivitis of one eye and a cataract of long standing. There was a marked discharge from both ears, and the patient was evidently suffering from otitis media (acute suppurative). His skin was deeply jaundiced; pulse was weak. The patient was put on antisyphilitic treatment and gradually improved, the otorrhea diminished and finally ceased; the eye was greatly improved. On tonic treatment the patient improved so that he was discharged at his own request February 13, 1894.

On February 22 patient again applied for admission. At this time the right side of his face was much swollen, tense, and painful on pressure, having a dark purplish

hue, resembling a severe contusion. He denied all history of a contusion, and as he had a temperature of  $39.3^{\circ}$  C. he was isolated as a suspicious case of erysipelas. The swelling of the face began to spread, the opposite side becoming affected and a distinct line of demarcation being present on the forehead. Physical examination showed the lungs normal; heart rapid and weak, but no organic murmur was heard; liver was slightly enlarged; spleen enlarged; abdomen was distended, tense, but not tender. Patient complained of intense pains throughout the body, especially the head. Minute purpuric spots appeared over the entire surface of the body. At one time the legs rapidly swelled and became very tense, but after a few days the swelling disappeared as rapidly. Patient suffered twice from attacks of heart failure, the pulse becoming lost at the wrist, the breathing shallow, and had intense pain over region of heart. The swelling of the face disappeared, the dark color remaining. The urine contained albumen, but repeated examinations failed to reveal any casts. Patient was put on iron, tonics, good food, and stimulants. The temperature came down to normal, and the patient seemed to be improving, but the pains continued. Early in the morning of March 12 the patient was found to be in a state of coma; the breathing was stertorous in character, fourteen to the minute; pupils contracted and regular, not responding to light; pulse was about normal. The patient could not be aroused. Atropia and stimulants were given, after the administration of which the patient could be aroused with great difficulty, but would immediately sink again into a comatose state. He died at noon, March 12, 1894.

*Necropsy.*—Rigor mortis marked. Pupils were dilated. Lungs were congested, and there were indications of an old pleurisy at the bases of both lungs. There were no adhesions of the pleura. Heart: The valves were normal, the muscle was somewhat pale. Aorta showed beginning calcareous infiltration. There was no pericarditis. Liver was large and congested, the remains of an old hepatitis. Spleen was much enlarged and lobulated. The suprarenal bodies were normal. The kidneys were much congested.

#### PYÆMIA—PERINEPHRITIC ABSCESS.

E. C.; aged 66 years; nativity, Maine; admitted to the United States Marine Hospital, Boston, Mass., March 30; died April 5, 1894.

This man was treated in this hospital from January 10 to March 17, 1894, for a very large carbuncle on back of neck. Under supporting treatment, free drainage, and careful dressings, the case progressed favorably and he left hospital in fair condition, the carbuncle giving him no trouble. When readmitted, on March 30, complained of pain and oppression in chest; temperature at this time  $39^{\circ}$  C. After three days in hospital temperature became normal. He was very anæmic in appearance and inclined to sleep most of time. Died April 5 at 8 a. m.

*Necropsy (three hours after death).*—Body medium size, fairly muscular; no marks or ecchymoses. Thorax: Heart weighed 375 grams; was covered with fat. Valves competent, but were covered with acute vegetation, such as are seen in pyæmia. Aorta appeared to be dilated at arch. Pleura adherent and inflamed. Lungs contained metastatic abscesses the size of a pea; hypostatic congestion posteriorly. Weight of left lung, 370 grams; weight of right lung, 450 grams. Liver amyloid, tough, and at one point slightly softened, indicating beginning abscess; weight of liver, 1,850 grams. Kidneys slightly larger in appearance than normal. They were exceedingly tough and hard, but capsule peeled readily; both surrounded by adipose tissue. Left kidney surrounded by a perinephritic abscess, which involved and destroyed suprarenal capsule. About 150 c. c. yellow pus present. Weight of kidneys: Left, 190 grams; right, 200 grams. Spleen dark blue in color; weight, 250 grams. Intestines and bladder normal. Brain and cord not examined.

## SYPHILIS, SECONDARY—MENINGITIS—INSANITY.

J. McD.; aged 44 years; nativity, Louisiana; admitted to the United States Marine Hospital, New Orleans, La., August 7; died August 13, 1893.

*History.*—The patient was escorted to the hospital by friends who could give no very intelligible account of him other than that he was considered "loony" and needed treatment. The patient himself was apparently dazed and but little information could be had from him. His pulse, temperature, and respirations were not exaggerated, and, as abundant signs of syphilis were apparent, a prompt and vigorous course of specific treatment was entered upon. Within forty-eight hours the patient's taciturnity developed into delirium; he became abusive to and assaulted fellow-patients, and was with difficulty restrained. He was transferred to the Louisiana Retreat for the Insane, as offering better facilities for his safe detention. Aphonia, immediately followed by stupor and coma, preceded his death.

*Necropsy (four hours after death).*—Body that of a muscular, fairly nourished white man of middle age. Height, 1.65 metres; circumference of shoulders, 90 cm. Post-mortem lividity slight; rigor mortis normal. Brain only examined. Face and scalp congested; skull of medium thickness and but slightly asymmetrical. Membranes of brain studded along superior cerebral line with minute tubercles. Brain, weight, 1,220 grams. Superior-longitudinal and inferior-longitudinal sinuses inflamed and thickened with lumpy tuberculoid matter at intervals.

## GENERAL DEBILITY—CONGESTION OF LUNGS.

S. T. (colored); aged 58 years; nativity, Delaware; transferred from Philadelphia, Pa., and admitted to the United States Marine Hospital, Baltimore, Md., February 19, 1891; died August 25, 1893.

*History.*—Was in Marine Hospital in Philadelphia from July, 1890, to February 19, 1891, for rheumatism. He had no swelling of joints, but considerable pain in them, sometimes of a shooting character. Bowels irregular; appetite and general health fairly good for a man of his age (he is evidently about 75 years of age). He continued in this condition for about one and a half years, until September 18, 1892. At this latter date he complained of his extremities feeling numb, and about February, 1893, was confined to his bed and seldom got up except to go to water-closet. On July 19, 1893, he fell and dislocated right shoulder (subcoracoid); this was reduced. On the 20th he was cold and weak; stimulants and hot bottles ordered. For two or three days after this had no control of sphincters. July 28, he complained of sudden pain in side, and upon examination found rib broken. July 30, seemed to have lost use of right arm and had considerable pain. August 9, was very dull and could not speak well; no pain. August 25, was unconscious all day to time of death; at 11.30 respiration was very labored and had been so all morning.

*Necropsy (seven hours after death).*—Heart light in color and slight roughness around valves. The superior lobes of the lungs normal; the inferior on either side were very much congested, and bronchioles and air cells clogged with blood; when put in water sank rapidly. The texture itself was very little, if at all, altered. There was an enormous deposit of fat on the kidneys; they were very light in color, and the external surface was marked by large and small blebs, which when cut exuded considerable yellowish fluid (serum). They were normal in size, but rather flabby. The line of demarcation between the cortical and medullary portions was almost obliterated. Liver and bladder normal.

## TUBERCLE OF LUNG.

## CASE 1.

L. J. (colored); aged 30 years; nativity, Virginia; admitted to the United States Marine Hospital, Baltimore, Md., May 9; died July 21, 1893.

Upon admission examination revealed a cavity at apex of left lung. Patient was soon confined to bed, suffering with the following symptoms: Night sweats, severe cough, much pain on left side, labored respiration, weakness and rapid emaciation. He had no hemorrhages. The above symptoms increased, and later he had severe diarrhœa.

*Necropsy (five hours after death).*—The left lung contained two large cavities in upper lobe and one very large one in inferior lobe; the remainder of the lung tissue was filled with tubercular deposits. The right lung had a large cavity in superior lobe, and the rest of this lung tissue was filled with tubercles. The lungs were thoroughly bound down by tubercular pleuritic adhesions to pericardium, diaphragm, and the thoracic parietes. The intestines and peritoneum were studded with tubercular deposits, and there were marked adhesions. The pericardium contained a quantity of clear serous fluid. Heart normal; liver enlarged and dark in color.

## CASE 2.

F. L.; aged 32; nativity, Massachusetts; admitted to the United States Marine Hospital, Chicago, Ill., January 28; died August 17, 1893.

*History.*—About the latter part of December, 1892, while doing some heavy lifting, he felt a sharp pain in left side of small of back, as if something had snapped or given way. He was unable thereafter to do any heavy work, but continued on duty until admitted to hospital, about a week later. Had frequent chills and fever and night sweats. Back very tender and painful. Severe cough and expectoration, with pain in region of kidneys as well as stomach and bowels. He became rapidly emaciated and died of general tuberculosis.

*Necropsy (twenty hours after death).*—Height, 5 feet 9 inches; circumference at shoulders, 18 inches; post-mortem lividity absent; rigor mortis slight; pupils dilated. The heart, after opening, weighed 190 grams; the pericardium contained a slight amount of fluid. The left lung weighed 1,370 grams; the right lung, 1,620 grams. Both lungs infiltrated with tubercular deposits. The pleural cavity contained about 200 c. c. of fluid. The omentum contained a great quantity of tubercular nodules. The liver was congested, of a dark purple color, and weighed 1,450 grams. The gall bladder and ducts were distended with bile. The kidneys weighed—left, 170 grams; right, 163 grams. The spleen was congested and weighed 160 grams. The brain, with membranes, weighed 1,470 grams.

## CASE 3.

S. C.; aged 26 years; nativity, Virginia; admitted to the United States Marine Hospital, Cairo, Ill., October 22; died November 6, 1893.

*History.*—Patient was sent to this hospital from Little Rock, Ark., under the diagnosis of tubercle of lung, with the statement that tubercle bacilli had been found in the sputa in large numbers. Cough was very troublesome, especially at night, and the expectoration was copious. Patient was very feeble; he suffered from dyspnea continuously. Pulse very rapid and dicrotic. Vocal fremitus increased over right lung; percussion note increased in pitch; subcrepitant rales throughout lung. On left side the percussion note was tympanitic; breath sounds were absent. Patient gradually weakened, and died November 6 at 9 a. m.

*Necropsy (twenty-four hours after death).*—Body emaciated; pericardium thickened and the quantity of pericardial fluid increased. Heart apparently normal; right



lung firmly adherent to chest wall; studded with tubercles and contained several small cavities. The left lung was about as large as two kidneys and firmly adherent to posterior wall of chest. The pleura was greatly thickened, gray in color, and at the base of the cavity was about 100 c. c. of purulent fluid. Stomach normal; liver somewhat fatty; spleen small and capsule shriveled. The mesenteric glands were enlarged. The intestines were apparently normal; kidney normal; bladder contained a small quantity of urine. Brain apparently normal.

## CASE 4.

F. C.; aged 31 years; nativity, Massachusetts; admitted to the United States Marine Hospital, San Francisco, Cal., February 8, 1894.

*History.*—The patient complained of cough, dyspnea, night sweats, and pain in the left side. He was also suffering from aphonia and hæmoptysis. The physical examination revealed a general tubercular infiltration of both lungs. On March 20 the patient was seized with an attack of asthma, and died at 3.50 p. m., after having been unconscious for four hours.

*Necropsy.*—The post-mortem examination was held at 2 p. m. March 21, twenty-two hours after death. Post-mortem lividity and rigor mortis were noted. The body was well nourished. Heart: Walls normal, valves healthy; ante-mortem clots in both ventricles, those in the right ventricle being quite large. General pleural adhesions on right side. On left side few lateral adhesions, but none anterior or posterior. Left lung gritty and caseous deposits at apex. In the middle of the organ, near its external surface, a cavity with a capacity of 50 c. c. was seen, surrounded by cirrhotic tissue. The base was somewhat engorged. The apex of the right lung appeared to be sound. The lower lobe was in a state of congestion (red hepatization). Throughout the organ a number of calcified masses were seen. Both lungs floated on water. The glottis and epiglottis were congested and presented minute tubercular deposits. Liver engorged; left lobe somewhat thinner than normal. Other viscera sound.

## CASE 5.

M. O.; aged 45 years; nativity, Massachusetts; admitted to the United States Marine Hospital, San Francisco, Cal., May 5, 1892, suffering from fistula in ano. He subsequently developed tubercle of lung, and has been under treatment for the latter trouble since March, 1893. Died at 12.30 a. m. April 28, 1894, after having been unconscious for about eighteen hours.

*Necropsy (ten and a half hours after death).*—Rigor mortis and lividity well marked; body well nourished. The pericardial sac was healthy, and contained about 50 c. c. of fluid. A large ante-mortem clot was found in the right ventricle. All the valves were competent. There were a few atheromatous patches on the mitral valve and in the ascending portion of the arch of the aorta. There were a few adhesions of the right pleura, chiefly at the apex. The left pleura was adherent all over. Two large cavities were at the apex of left lung; congested at the base. Tubercular infiltration of right lung; base congested. Thyroid cartilages calcified; glottis somewhat thickened. Stomach enlarged; walls studded with perforating ulcers of various sizes. The liver was undergoing fatty degeneration. The spleen was irregularly enlarged. There was a large cyst at the upper extremity of the right kidney, and several small cysts at the lower extremity of left. Other organs not examined.

## CASE 6.

A. B.; aged 45 years; nativity, Scotland; admitted to the United States Marine Hospital at San Francisco, Cal., November 21, 1892; died February 23, 1894.

*History.*—Patient on admittance was suffering from advanced tuberculosis. Treatment throughout was merely palliative.

*Necropsy (six hours after death).*—Post-mortem rigidity. Patient greatly emaciated. General adhesion of both pleuræ. Left lung contained much cicatricial tissue and was riddled with cavities and patches, undergoing caseous degeneration. Upper lobe of right lung was infiltrated with miliary tubercles. Middle and lower lobes in a condition of congestive inflammation and sank in water. Ante-mortem clot in left ventricle of heart; no evidence of disease. Mesenteric glands were involved, some of them caseous, others calcified. On a lower loop of the ileum was a small congested area dotted with tubercles. The other viscera were normal.

## CASE 7.

E. N.; aged 41 years; nativity, Norway; admitted to the United States Marine Hospital at San Francisco, Cal., June 12, 1893; died May 4, 1894, at 2.30 o'clock a. m.

*History.*—On admittance patient complained of cough, with expectoration of purulent sputum, dyspnœa, pain in chest, and loss of flesh. Treatment was instituted, and his condition remained about stationary until the evening of May 3, 1894, when he developed a sudden, large hemorrhage. After the first gush of arterial blood, amounting to about 500 c. c., there kept up a slight oozing until death supervened from exhaustion.

*Necropsy (eleven hours after death).*—Post-mortem rigidity, but no lividity. Body fairly well nourished. Heart contained some fatty deposits; the whole organ was larger than normal and weighed 420 grams. Lungs floated in water. Right lung was greatly reduced in size. The apex was nearly airless, being composed of cicatricial tissue. The middle lobe contained several small caseous masses. The lower lobe had been much reduced in size from compression by the liver. The right side of the chest was flattened and the pleuritic surfaces were adherent. Left lung near apex contained a large blood clot which occupied a cavity with a capacity of 75 c. c. Several smaller empty cavities were found in the rest of the upper lobe. The whole of the lower lobe had minute tubercles disseminated throughout its structure. Anteriorly and at the apex the pleural surfaces were adherent. The liver was about twice the normal size, weighing 4,070 grams, and was in a condition of waxy degeneration. The spleen was enlarged; weight, 480 grams. Both kidneys showed marked amyloid changes and were about twice the usual size. The alimentary tract was healthy. A scrotal hernia containing nearly all of the omentum existed on the left side.

## CASE 8.

H. A.; aged 45 years; nativity, Germany; admitted to the United States Marine Hospital, San Francisco, Cal., August 22, 1893; died June 26, 1894, at 9.30 o'clock p. m.

*History.*—On admittance patient complained of night sweats, purulent expectoration, cough, poor appetite, vomiting, and loss of 16 kilograms in weight. Examination indicated tubercular deposit throughout left lung. During period of treatment lung steadily underwent disintegration. Exhausting night sweats were a recurring and obstinate feature. On the night of June 26, 1894, patient had a sudden hemorrhage and immediately died.

*Necropsy (thirteen hours after death).*—Rigor mortis; no lividity; body wasted; heart normal; about 50 c. c. serum in pericardium. Right lung and pleural sac unusually large. Quite a large emphysematous dilatation at apex, also a few tubercles. Left lung entirely broken down with abscess cavities. A branch of the pulmonary vein was eroded, and was the cause of the hemorrhage; abdominal viscera normal.

## CASE 9.

F. S.; aged 34 years; nativity, Germany; admitted to the United States Marine Hospital at San Francisco, Cal., December 2, 1893; died June 16, 1894, at 3.30 p. m.

*History.*—On admittance patient had been suffering from an extensive ulcer of the penis for four months, also bubo of the right groin for nine days. No history of specific infection. Neither ulcer of penis nor inguinal bubo were mate

affected by treatment. Soon after coming to hospital he showed signs of tubercular disease of lungs. On June 3, 1893, patient had a severe chill, followed by continuous fever until death.

*Necropsy (eighteen hours after death).*—Rigor mortis and post-mortem lividity pronounced. Heart normal. Slight adhesions about apex of left lung and posteriorly; two cavities of about 25 c. c. capacity each near apex; rest of lung filled with minute tubercles. Firm adhesions all around the right lung. Large cavity near apex. Tubercular deposits and caseation throughout lung. Liver, spleen, and kidneys healthy.

## CASE 10.

T. R.; aged 20 years; nativity, Virginia; admitted to marine ward St. Vincent's Hospital, Norfolk, Va., January 17; died February 1, 1894.

*History.*—Patient had cough; fever; was much emaciated, and presented all the physical signs of tubercle of lungs.

*Necropsy (twelve hours after death).*—External appearances: Rigor mortis slight; body much emaciated. Thoracic cavity: Both pleurae were studded with gray tubercles; there was small quantity of fluid in pleural cavities and numerous adhesions. Both lungs were much enlarged and studded with tubercles, gray and yellow. The entire lung structure was inflamed. A small cavity was found in the apex of the left lung. The pericardium was slightly congested. Heart normal. The glands in the posterior mediastinum were enlarged. Abdominal cavity: The peritoneum was only slightly inflamed, although numerous tubercles were found in its structure. The liver was of normal size. The mucous membrane of the ileum was congested, and the glands showed tubercular infiltration and ulceration. Spleen was enlarged and softer than normal. Pancreas normal. Kidneys normal.

## CASE 11.

J. A.; aged 49 years; nativity, Sweden; admitted to the United States Marine Hospital, Chicago, Ill., May 20; died August 25, 1893.

*History.*—Had been suffering from tubercle of lung for several years, and was in hospital each winter, but would go out when the weather became warm again. On his last return to the hospital was much emaciated and suffering from tubercular diarrhoea. He gradually failed, the disease following its usual course until death.

*Necropsy (eighteen hours after death).*—Rigor mortis well marked. Body much emaciated. Pericardial sac contained about 30 c. c. of fluid. Heart weighed 225 grams; valves competent. Dense old pleuritic adhesions on both lungs, which were filled with tubercles and cavities of various sizes. Small intestines congested. Tubercular ulcers scattered along ileum. Liver congested; weight, 1,250 grams. Left kidney weighed 170 grams; right, 130 grams; congested and contracted. Spleen: Color dark, pulpy; weight, 210 grams. Other organs not examined.

## CASE 12.

D. R.; aged 50 years; nativity, Scotland; admitted to the United States Marine Hospital, San Francisco, Cal., June 23, 1891; died November 11, 1893, at 4 o'clock a. m.

*History.*—On admittance complained of cough, night sweats, hæmoptysis, and much expectoration. Physical examination revealed physical signs of tubercle of lung, the right lung being affected. The patient continually became worse, and left lung became affected with tubercle; he had several attacks of hæmoptysis toward latter part of illness; his night sweats became very exhausting. On October 28, 1893, patient became delirious; power of muscular coordination was impaired and had only imperfect conception of words. On October 29 motility was good, but amnesic aphasia was complete. His condition now became steadily worse, and he died at 4 o'clock a. m. November 11, 1893.

*Necropsy (eleven hours after death).*—Body was well nourished; there was no emaciation; no discoloration. Left lung: Small caseous tubercular foci studded the apex; very little crepitation at apex; rest of lung healthy. Right lung: There was about 500 c. c. of pus in pleural cavity; the parietal pleura was calcified in many places, the thickness at one place being 1 mm. The lung was about one-third its normal size, as much of it was disintegrated. Much of the surface next to the pus cavity was eroded, the pleura being absent. There were numerous small cavities and caseous spots throughout right lung. Heart was about normal in size; there was a mitral incompetence; some endarteritis of arch of aorta; liver was healthy; spleen was healthy; both kidneys were congested; left contained two small cysts. There was no inflammation present; brain was congested; no lesion found.

## CASE 13.

N. S.; aged 20 years; nativity, Kentucky; admitted to the United States Marine Hospital, Cairo, Ill., July 29; died August 1, 1893.

*History.*—Patient was brought to hospital in a carriage from steamer coming from Paducah, Ky., for treatment. Had been unable to do work of any kind for several months. Cough, expectoration, night sweats, great emaciation. Morning temperature, 39° C.; evening, 40° C. He failed rapidly, and died at 8.45 p. m. August 1, 1893.

*Necropsy (thirteen hours after death).*—Body extremely emaciated. Rigor mortis well marked. Right lung was firmly adherent to chest wall, completely obliterating the pleural cavity. There were several small cavities at apex. Left pleura thickened throughout and gray in color. There were numerous adhesions. The lung was a tuberculous mass. Pericardium thickened and the fluid slightly increased in quantity. Heart apparently normal. Stomach normal. Liver enlarged and fatty. Spleen a little enlarged, soft, and friable. Intestines apparently normal. Mesenteric glands enlarged. Kidneys were pale, but otherwise healthy. Bladder contained small quantity of urine.

## CASE 14.

*Empyema.*

T. V.; aged 22 years; nativity, San Salvador, Central America; admitted to the United States Marine Hospital, San Francisco, Cal., on June 7, 1892; died June 19, 1894, at 2.30 o'clock a. m.

*History.*—On admittance patient had a large pleuritic effusion of the right side. Aspiration was twice performed, when the serous effusion became infected with pus organisms. An incision was made into the thorax and a large quantity of pus evacuated, a drainage tube being left in the wound. This proved insufficient for drainage, and on January 22, 1893, a portion of the seventh rib, about 5.5 cm. in length, was excised and a considerable quantity of fetid pus removed. Discharge of pus continued, and his general condition vacillated between improvement and decline, until August 23, 1893, when pus commenced to form in larger quantity, and another incision into pleural sac was made posteriorly, just below the inferior angle of the scapula. On August 26, 1893, portions of the third, fourth, fifth, sixth, and seventh ribs were resected and the pleural cavity curetted. Pain and pus discharge kept up without abatement until, on September 5, 1893, under ether, 3 cm. were taken off of posterior ends of ribs previously operated upon. Thenceforth pleural cavity was daily irrigated with antiseptic solutions and packed with iodoform gauze. Tuberculosis of the previously sound lung (left side) developed. Long-continued suppuration, with intermittent pyrexia, cough, pain, loss of sleep, and impaired nutrition, at last overcame the vital forces.

*Necropsy (eight hours after death).*—Rigor mortis well marked; body emaciated. Right thoracic walls were sunk in so that the cavity was diminished at least two-thirds. Pericardium contained considerable fluid; heart normal in size and healthy. Right lung was intact, but nearly airless; it was contracted into a cylindrical mass about 13 cm. long by 5 cm. in diameter and lay against the bodies of the vertebræ. Left lung contained a few scattering tubercles and the lower lobe was congested.

There were no pleuritic adhesions. The pleural sac contained much purulent fluid. Several enlarged and caseous mediastinal glands were found. Liver slightly enlarged and weighed 1,812 grams. Spleen enlarged and tough; weight, 710 grams; compared with body weight, 1 to 70. Left kidney enlarged and in the condition of amyloid degeneration; weight, 270 grams. Right kidney in same condition; weight, 280 grams.

#### CASE 15.

##### *Pericarditis.*

T. L.; aged 30 years; nativity, Norway; admitted the last time to the United States Marine Hospital, New Orleans, La., June 3, 1892; died November 1, 1893.

*History.*—This patient had been a frequent inmate of marine hospitals for the past five years with diseases of the respiratory system, and on admission to this hospital displayed by the symptoms that the slow, resistless march of pulmonary consumption had begun. Later in the disease the signs of pericardial involvement became obvious, and although both diseases were combated with all the known palliatives he lingered until his death as above noted.

*Necropsy (fourteen hours after death).*—Body that of a muscular young white man; much emaciated; pallor noticeable. Rigor mortis slight. Heart: Weight, 310 grams; surface roughened; pericardial sac partly adherent to the heart, and cardiac surface very rough. Aortic valve competent; mitral valve incompetent; valves slightly thickened. The proximal margins of the pulmonary and tricuspid valves were each the seat of a papillary growth, projecting through their orifices, that of the latter being 13 cm. long and 0.5 cm. in diameter, and its free end extending through the pulmonary orifice. Larynx and trachea were denuded of mucous membrane and much congested. Lungs: Each weighed 550 grams, and each, with the exception of large cavities in the apex of right lung, a mass of tubercle throughout. Left pleural cavity obliterated by old adhesions; right, free below, but obliterated in upper one-half. The abdominal viscera contained but very few tubercles, and, except a slight congestion of the left kidney, were apparently normal. Weights: Liver, 1,485 grams; pancreas, 60 grams; kidneys, left 170 grams, right 172 grams; spleen, 260 grams. A slight pachy-meningitis was observed along the antero-posterior fissure, and the meninges of the cord, which in its upper portion showed an excess of fluid, gave evidence of recent inflammation.

#### CASE 16.

##### *Aneurism of thoracic aorta.*

J. S.; aged 45 years; nativity, England; admitted to the United States Marine Hospital, San Francisco, Cal., February 6; died May 21, 1894, at 12 o'clock m.

*History.*—On admittance patient complained of prostration, pain over stomach and back, anorexia, constipation, and distressing cough. General appearance that of a man with marked cachexia. Flat dullness toward base of left lung, and a prominent left latero-posterior curvature of the spinal column. A hypodermic needle revealed presence of serum in the left pleural cavity. Aspiration was performed and 750 c. c. of a reddish-tinged serum withdrawn. Subsequently dyspnoea necessitated aspiration several times. Microscopical examination of the sputa disclosed tubercle bacilli. Later on pulsation was discovered in the prominence over the spinal column in the mid-dorsal region. The heart sounds were audible, but no bruit. Various diagnoses were entertained, such as new growths, pulsating empyema, abscess from Pott's disease, and aneurism of the thoracic aorta. Three weeks before death patient developed general anasarca. At first there were occasional attacks of violent pain, with dyspnoea, and these attacks grew in frequency toward the end.

*Necropsy (ten and one-half hours after death).*—Post-mortem rigidity. No discoloration of body, which was extremely wasted. Right pleural surfaces slightly adherent at apex. Small quantity clear fluid in sac. Right lung dark color and exuding *whity matter* on section. Upper portion middle lobe a little congested. Left pleu-

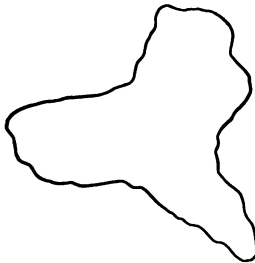
ral surfaces considerably thickened and firmly united. Left lung much reduced in size, and broken down with holes filled with pus or caseous matter. Heart was small, weighing only 180 grams, but appeared healthy. There was a large sacular aneurism springing from the posterior wall of the thoracic aorta. The orifice of communication was 4 cm. long by  $1\frac{1}{2}$  cm. wide and elliptical in shape, being situated on a level with the seventh dorsal vertebra. The bodies of the dorsal vertebra, from the third to the ninth, inclusive, were eroded, the fifth and sixth being almost entirely absorbed. The ribs on the left side were eroded, the fifth and sixth dislocated, the seventh, eighth, and ninth eroded through a short distance from the vertebra. On the right side the seventh and eighth ribs were eroded, the seventh being detached. The aneurismal sac was incomplete posteriorly. It would hold about 2 liters. The aneurismal wall was made up of successive fibrinous layers, which had undergone organization from before backward. The whole mass weighed 1,000 grams. Liver was adherent to diaphragm and rather small in size. On section it cut like leather, and was found to be in a condition of fibroid degeneration. Spleen was slightly adherent to the diaphragm, but normal in appearance. Capsules were non-adherent on both kidneys; cortical substance in each organ somewhat thinned. Each suprarenal capsule was larger than normal and very hard. The other viscera were healthy.

## CASE 17.

*Pyonephrosis.*

H. H.; aged 39 years; nativity, Nova Scotia; admitted to the United States Marine Hospital, San Francisco, Cal., November 27; died December 12, 1893, at 8 o'clock a. m.

*History.*—On admittance complained of cough, hæmoptysis, night sweats, and rapid loss of flesh. Physical examination revealed signs of tubercle of lung, mostly



situated in left lung. The patient's condition became steadily worse, all the symptoms growing more and more aggravated. On December 5 he had a severe attack of gastralgia, and on the 6th fell into a semicomatose condition. From this time on it was only possible to arouse him sufficiently to administer nourishment, until 12 m. of December 11, when the coma became profound. He died at 8 o'clock a. m. on December 12, 1893.

*Necropsy (six hours after death).*—No rigor mortis. Body was much emaciated. Post-mortem lividity present. Pleuritic adhesions existed on both sides, anteriorly, laterally, and posteriorly. Right lung was congested and infiltrated with caseous tubercular matter. Left lung contained numerous cavities. The heart ventricles contained post-mortem clots. The wall of the left ventricle was found to have two small patches of tubercular disease near the auriculo-ventricular junction. The liver was slightly fatty; otherwise normal. The capsules of the kidneys were found non-adherent. Four small areas of tubercular infiltration were discovered beneath the capsule, on the cortex of the right kidney, near the pelvis. Left kidney was larger than normal and of irregular contour. The cortical and medullary portions were destroyed, little remaining besides the capsule, pelvis, and reflections of the infundibula. On section of the kidney, about 50 c. c. of urine and pus escaped. Within the pelvis was found an oxalate of lime calculus in size and shape roughly represented above.

## CASE 18.

*Meningitis.*

J. M. F.; aged 38 years; nativity, Prince Edward Island; admitted to United States Marine Hospital, Boston, Mass., January 10, 1894, suffering with tuberculosis of lungs; died May 21, 1894, at 4 a. m. Three days before death he suffered from delirium. Had suffered for several weeks with diarrhœa and insomnia.

*Necropsy (seven hours after death).*—Body tall, slightly built, emaciated. Cicatrix on each knee. Small papilloma on inside of right thigh. On right forearm had anchor and cross in India ink, with heart worked in center and wreath beneath. Rigor mortis not marked. No post-mortem lividity. Heart weighed 350 grams. Ante-mortem clot in right side. Valves pale and flabby; all competent except mitral, which was thickened and contained old vegetations. Larynx contained tubercle. Both lungs infiltrated with tubercle; a few small pus cavities in each. Left lung weighed 950 grams; right, 1,350. Pleura adherent. Stomach and intestines slightly discolored, but otherwise normal. Liver congested; weight, 1,850 grams. Pancreas weighed 70 grams. Kidneys: Line of demarcation between cortical and medullary substance normal. Capsule easily peeled. Left kidney weighed 215 grams; right, 190 grams. Pelvis and ureters normal. Urinary bladder greatly distended with urine. Spleen lobulated and rather hard in substance; weighed 220 grams. Calvarium normal except bone rather thinner than usual. Slight traces of tubercle in membranes at base of brain. Pia mater and arachnoid contained tubercle. Ventricles, especially the lateral, distended with fluid. Brain substance normal and rather larger than usual; weight, 1,410 grams.

## MILIARY TUBERCULOSIS.

## CASE 1.

M. W.; aged 28 years; nativity, Louisiana; admitted to the United States Marine Hospital, New Orleans, La., March 13; died April 4, 1894.

*History.*—On admission patient complained of pain in left side of chest, shortness of breath, troublesome cough, and headache. He had been admitted to hospital February 27, 1894, with acute pleurisy, and was treated for the same until March 12, 1894, when he was discharged recovered, and readmitted next day for treatment for tubercle of lung.

*Necropsy (five hours after death).*—Rigor mortis well marked; body that of a poorly nourished young negro, greatly emaciated. Heart weighed 275 grams, pale and flabby; left ventricle contained fibrin clot; all of the valves were found competent. Trachea and bronchi were greatly inflamed. Left lung weighed 560 grams, studded with small tubercular deposits. Pleural cavity normal. Right lung weighed 1,880 grams; tubercular masses and cavities throughout. Pleural cavity obliterated by old adhesions. Peritoneum studded with large caseous, tubercular masses. Small intestine studded with tubercular masses; large intestine congested and contains tubercular deposits. Rectum slightly congested. Liver normal; weight, 1,700 grams. Gall bladder and ducts distended with bile. Kidneys: Each weighed 160 grams and both were pale and flabby. Spleen weighed 355 grams, studded with tubercles and congested.

## CASE 2.

H. C. (colored); aged 23 years; nativity, Tennessee; admitted to the United States Marine Hospital, Memphis, Tenn., January 20; died April 8, 1894.

*History.*—On admission to the hospital the patient gave a history of having been sick about a week, his symptoms being fever, pains in limbs and body, a moderate cough, and looseness of the bowels. His mental state was very dull, but he did not appear to have the frontal headache of enteric fever. He had considerable bronchitis.

There was tenderness in the region of the liver. His tongue was red and coated. A false diagnosis of typho-malarial fever was made. After five weeks of fever the temperature remained at normal, and the patient appeared to be recovering. In another week there was a return of fever, which continued irregularly, sometimes subsiding in the morning and returning in the afternoon, until a few days before death, when fever was again absent. There were sweats with the fever, but no chills. In the last three weeks of life chest symptoms similar to those of pleurisy and lobular pneumonia developed, and breathing became very difficult at the last.

*Necropsy (seven and one-quarter hours after death).*—Rigor mortis was present in moderate degree. The general nourishment was poor. Pupils dilated. The heart weighed 305 grams. The pericardial sac was distended with serum. Large patches of partly organized deposit were attached to the heart, but there were no adhesions of the pericardium. The valves were all competent and the ventricular walls were of normal thickness. The left lung weighed 841 grams. Its pleural cavity contained a large quantity of yellow serum, separating the lower lobe from the chest wall, while about the upper lobe were newly formed adhesions. Tubercles were present in the upper lobe in considerable number, and the lung showed a tendency to hepatization of lobular patches. The right lung weighed 1,147 grams. Its pleural cavity was obliterated by strong adhesions, as were also the divisions between the lobes. The lung was extensively affected with tuberculosis, the patches varying in size from single tubercles to large solid lumps, all being in a recent stage of growth. The mucous membrane of the ileum and of the descending colon were examined. Scattered deposits of tubercle of nearly the size of a pea were found in the ileum, and some of these had begun to ulcerate. Some ecchymotic patches were found in the large intestine, but no certain indications of inflammation. The right lobe of the liver was adherent to the diaphragm in a small area next to the coronary ligament. The tissue of the entire organ was specked with tubercular deposits of the size of a pin's head and a little larger. It weighed 2,460 grams. The left kidney weighed 236 grams. It contained solid tubercular deposits of large size, and the natural markings of the tissue were much obliterated. The right kidney weighed 184 grams. It was congested and contained tubercular deposits, but, unlike the other kidney, its tissue was naturally marked. The spleen was enlarged, weighing 645 grams. It contained a number of large tubercular patches. Enlarged, cheesy lymph glands were found in the mediastinum, and the mesenteric glands were enlarged. Other organs were not examined.

### CASE 3.

#### *Influenza.*

J. Q.; aged 34 years; nativity, Ohio; admitted to the United States Marine Hospital, Chicago, Ill., May 15; died September 4, 1893.

*History.*—Came into hospital suffering from influenza, from which he improved, but the tubercular disease began to make headway, and from it he died.

*Necropsy (eight hours after death).*—Rigor mortis poorly marked; body emaciated. Heart normal; weight, 280 grams. Left lung weighed 1,020 grams, filled with tubercles; the whole upper lobe was occupied by a tubercular cavity. Right lung weighed 1080 grams; tubercular, and had dense old pleuritic adhesions. Tubercular deposits were scattered throughout the intestines and mesentery. Liver congested; color dark; weighed 1,650 grams. Kidneys: Left weighed 180 grams; right, 180 grams; both contained tubercles. Spleen weighed 240 grams; tubercular. Brain weighed 1,320 grams. Brain tissue œdematous, and contained tubercular deposits. Other organs not examined.



## ABSCESS OF BRAIN.

## CASE 1.

E. W.; aged 43 years; nativity, United States; admitted to marine ward, St. Mary's Hospital, Milwaukee, Wis., June 5; died June 26, 1894.

*History.*—About nine years ago was struck on the head by a ship's yard and was unconscious for three days; suffered from various cerebral symptoms and was ultimately completely disabled. Two years ago he was operated on in England for abscess of brain and cured, and remained in fair health till May 29, 1894, when he received a severe blow at the spot which had previously been trephined. He was then unconscious for about three-quarters of an hour; was numb all over; vomited and had headache, which continued up to the date of his admission to hospital here. On admission he had headache, dizziness, paralysis of the last three fingers of the left hand, with numbness and loss of sensation in left forearm and hand; difficulty in articulation, with partial loss of sight in left eye. These symptoms continued after his admission and grew worse, and he had also epileptiform convulsions, commencing at about 1 p. m. and ending at 1 or 2 a. m. every day; his pulse varied from 80 to 100; no rise of temperature. Diagnosis made was abscess of brain. June 13, 1894, an incision was made at the point which had formerly been trephined, through the scalp and dura mater, and search was made for pus in the brain with an exploring needle, but none was found. He was trephined at two other points, but no pus found. There was no marked improvement after the operation, but the convulsions ceased. He was most of the time wildly delirious, and died June 26, 1894.

*Necropsy (twenty-seven hours after death).*—Rigor mortis not marked; skin very yellow and livid. On removing the scalp, dark, sanious fluid exuded; pia mater yellow. In left frontal lobe of cerebrum there was a softened and yellow discolored area extending from the first convolution above to the third below, and antero-posteriorly from the middle of frontal convolution to the anterior central convolution, including the latter. In the center of this softened and discolored area, about the first part of second frontal convolution, was a recent blood clot, in the middle of the arm area. There was a small abscess, about the size of an almond, lying half an inch below the cortex. The lesion of the first operation is marked by a disintegrated mass, occupying an area about as large as a silver dollar. As cause of death was evidently the lesions of the brain, no examination was made of the rest of the body.

## CASE 2.

T. H.; aged 60 years; nativity, Ireland; admitted to the United States Marine Hospital, Portland, Me., June 27; died June 29, 1894.

*History.*—The patient, who had been treated at the United States Marine Hospital, Chelsea, Mass., from February 23 to March 12, 1894, suffering from acute synovitis, from which he recovered, was admitted in an unconscious condition, and remained so until his death. As a consequence, no history of the case could be obtained, as he was brought to this port by a transfer steamer, which took him off a vessel. He had been visited during the morning by a local physician at Booth Bay, who prescribed a mixture of rhubarb and soda for a diarrhœa of which he complained. He was then conscious, walked about unaided, but during the voyage to Portland he became gradually unconscious.

*Clinical history.*—Upon inquiry of the ambulance driver about the condition in which the patient was found, he reported that the man was suffering from meningitis, a diagnosis made by someone who happened to guess near the truth. His temperature was 39.4° C., breathing rapid and shallow; mental condition one of partial receptivity; pupils about normal and evenly dilated. He was restless, rolling from side to side, and persisted in rubbing the toes of both feet with his hands every few minutes. It was found impossible to give medicine by the mouth, and a

hypodermatic injection of morphia was given and cold applications made to head. Patient rested about three hours during night. Control over sphincters was retained, and catheterization was performed in the morning and urine withdrawn. Symptoms remained about the same. He would not respond to questions, but could articulate voluntarily. Strychnia was administered hypodermatically. No improvement of symptoms followed the line of treatment adopted, and the patient gradually sank, dying at 11.55 p. m., about twenty-eight hours after admission.

*Necropsy (thirteen hours after death).*—A complete examination of the body was made, but especial attention was devoted to the brain and cranial cavity. Rigor mortis was well marked, and lividity of skin was present on neck and under surface of body. The right pupil was small; the left half dilated. The body was well nourished, and a uniform layer of fat was present, as well as a large quantity in the omentum. The heart weighed 360 grams. The left ventricle was hypertrophied, the wall thickened; the right was dilated and the wall thin. The aortic and mitral valves were incompetent; the pulmonary and tricuspid valves were competent. The lungs were normal; no pleuritic adhesions, but a condition of passive congestion of each was noted. The right weighed 570 grams; the left, 530 grams. Peritoneum was normal; no adhesions. The liver was of a nutmeg color and appearance, weighing 1,600 grams. The gall bladder was distended with bile. The kidneys were normal; each weighed 200 grams and each had a slightly adherent capsule. The spleen was small, weighing only 95 grams. Brain: The cerebellum weighed 180 grams, the cerebrum 1,250 grams, and the evidence of a diseased condition was immediately apparent upon its removal from the cranial cavity. Along the track of the veins of the dura mater lines of pus were seen, a condition that was later observed in the sulci of the convolutions. Pus was found in the fourth ventricle in the greatest quantity, perhaps 3 c. c., and this was traced to the meatus auditorius internus, left side, where a carious condition of the petrous portion of the temporal bone was found. This broke down at once upon pressure into the auditory canal a portion about as large as a pea being easily scooped out, showing pus in the cancellous structure. This portion of the temporal bone was sawed out to include the mastoid process, and extension of the pus was found in this latter cellular structure. No evidence of external discharge was found.

*Remarks.*—This is another case of inward extension of mastoid disease, probably, although it may have begun with disease of the internal ear. The destructive process took the course of the petrous portion of the temporal as its method of exit for the products of suppuration, and the presence of pus on the base of the brain, in the fourth ventricle, resulted in destruction of vital functions from pressure.

#### SOFTENING OF BRAIN.

P. P.; aged 52 years; nativity, Sweden; admitted to the United States Marine Hospital, Boston, Mass., April 8, 1892, suffering from dementia. In September, 1893, lost power of coordination, and unable to walk; also lost control of sphincters. In October, 1893, lost power of speech. May 18, 1894, at 1 p. m., was taken with violent trembling, stertorous breathing, right pupil dilated, left normal, tonic contraction right arm. Died May 19, 1894, at 6.50 p. m.

*Necropsy (thirty-nine hours after death).*—Post-mortem lividity on back and neck. Rigor mortis marked. General nourishment excellent. Both pupils contracted. Heart small and contracted, its valves pale and flabby; weight, 280 grams. Hypostatic pneumonia in posterior part of both lungs. Weight of left lung, 700 grams; right lung weighed 705 grams. Pleura not adherent. Intestines distended by gas. Stomach dilated, reaching almost to pelvis. Pyloric orifice not lessened in diameter. Post-mortem discoloration of liver very considerable; weight, 1,400 grams. Gall bladder and ducts normal. Kidneys apparently normal; left weighed 105 grams; right, 120. Urinary bladder empty. Spleen soft and pulpy; weight 80 grams. Skullcap thick. Membranes of brain chronically inflamed and thickened.

Brain weighed 1,265 grams. Ventricles enormously dilated with serum. Areas of softening throughout internal capsule. Point of softening and granular appearance in lower part of cerebellum.

#### ACUTE MYELITIS—PARAPLEGIA.

W. L.; aged 22 years; nativity, Nova Scotia; admitted to the United States Marine Hospital, Boston, Mass., September 8; died December 5, 1893

*History.*—Had been sick for four weeks. Both legs and feet swollen and painful. No history of traumatism nor of venereal disease. Partial loss of motion in both legs. Unable to walk without assistance when he came to the hospital. Had pain in both legs and retention of urine. Upon examination urine was found to be normal. Sound passed and slight stricture found. Total paralysis of both lower extremities soon followed, with loss of power over rectum and bladder. Diarrhoea and cystitis set in.

*Necropsy (twenty-four hours after death).*—Rigor mortis and post-mortem rigidity marked. Emaciation extreme. Bed sores over sacrum and both heels. Heart small; weight, 170 grams. Pericardium thickened; mitral and tricuspid valves were pale, flabby, and thickened. Liver congested; weight, 1,200 grams. Gall bladder full. Kidneys cirrhotic; both pelves dilated; weight of right, 150 grams; of left, 160 grams. Capsules easily detached. Pelvis of left kidney contained a small amount of pus. Bladder contained some pus and was hypertrophied concentrically. Spleen dark, lobulated, and soft; weight, 170 grams. Two supernumerary spleens were found. One weighed 10 grams; the other was about the size of a pea. At about the last dorsal vertebra the cord was broken down entirely for 3.75 cm. in length. Membranes were intact. No tumor of cord. Vertebrae were in normal condition.

#### CEREBRAL HEMORRHAGE.

##### CASE 1.

H. J.; aged 44 years; nativity, Greece; admitted to the United States Marine Hospital, San Francisco, Cal., August 5, 1893; died May 19, 1894, at 7.50 o'clock p. m.

*History.*—On admittance patient said that he had become suddenly paralyzed six months before. He had ataxic aphasia to such a degree that it was difficult to understand his attempts at speaking. Upon using his voluntary muscles, as the arms and legs, they were thrown into a condition of clonic spasm. His locomotion was consequently very jerky and impeded. The clonic spasm of the upper extremity was such that most of the time it was necessary for the nurse to feed him. At times the spasmodic condition improved. Six months before death the patient exhibited insane delusions, generally of a harmless nature. He gradually sank into a condition of mental imbecility. On February 22 patient had a convulsion which resembled a general epileptic seizure, remaining unconscious thereafter for eight hours. On the morning of the 18th of May, 1894, he had another convulsion, followed by complete coma, from which he did not rally.

*Necropsy (fourteen hours after death).*—Post-mortem rigidity and lividity. Body well nourished. The meninges of the spinal cord in the lumbar region were congested. On the left side of the brain a spread-out, thin clot of blood was found between the dura mater and arachnoid membrane. The clot overspread the posterior part of the frontal lobe, all of the parietal, and a part of the occipital and temporo-sphenoidal lobes of the cerebrum. The convolutions of the cerebrum, left side, appeared well developed. The convolutions of the island of Reil, the claustrum, and external capsule were in a state of necrotic softening. The nuclei caudatus and lenticularis of the striate body and the anterior limb and knee of the internal capsule presented a bluish appearance and were tough on cutting. The *septum lucidum* was broken down. The right cerebral hemisphere, on section on

a level with the so-called centrum ovale minus presented, besides the usual puncta vasculosa, numerous orifices varying from microscopic size to 10 mm. in diameter. These orifices, which could be seen on the cut surface, from the anterior to the posterior limits, were particularly numerous near the lateral ventricle, and resembled the open mouths of the hepatic veins on section of the liver. On successive deeper sections of the cerebrum the same appearance was presented, except that the orifices were larger and less numerous, the lesser channels coalescing to form larger ones. They could be traced directly into the lateral ventricle. They were possibly produced by inflammatory condition of the vessels, or from pressure caused by hypersecretion of cerebro-spinal fluid in the ventricle. The examination of the brain, which had been preserved in alcohol, was made seven weeks after death.

## CASE 2.

J. B. (colored); aged 27 years; nativity, West Indies; admitted to the United States Marine Hospital, Baltimore, Md., September 21; died September 27, 1893.

*History.*—Father died suddenly, but patient did not know cause. Gave history of having had two sores on penis about two years before. On both legs, running down the median line, were scars, apparently the remains of syphilitic sores. He said he had been having cramps in arms, hands, legs, and feet for the past two years, off and on; they came on when occupying one position for a great length of time, and especially during damp and cold weather; they lasted from fifteen to thirty minutes. He slept in an apartment next to ice, with which his boat was loaded, and the door open. He caught a cold from this, and his face, ankles, and prepuce became very oedematous. The abdominal cavity was also distended with fluid. Urine contained about 50 per cent of albumen. Pulse was slow. During the evening of September 21 was given a dose of salts, which acted on bowels. September 22, felt better; gave *mistura ferri et ammonii acetatis*. September 23, during night, went to stool three times and twice passed a great deal of blood. During the day of September 24 had three stools and each time passed blood; was given an enema of starch water and laudanum. September 25, cream of tartar and lemonade was given. September 26, urine contained a great deal of albumen; sp. gr., 1.008; light in color. The oedema of prepuce and legs had disappeared to a great extent, but the oedema of face remained about same. September 27, at 9.15 a. m., he complained of feeling heavy; he firmly flexed his arms and in a few minutes was unconscious; legs and arms became rigidly extended; respiration was of a whistling character, and later quite labored. He frothed considerably at the mouth; temperature rose to 41° C.; pulse, 136. About an hour later pulse was 155 per minute. During this time there was a tendency to hemorrhage from mouth and nose. He remained in this condition until 4 o'clock p. m., when he died.

*Necropsy (fourteen hours after death).*—The tissues very oedematous. Rigor mortis well marked. Body was well nourished. When making an incision through the scalp a large quantity of dark blood ran out. When skullcap was removed a large quantity also ran from the cavity. The brain looked normal until cutting into the left lateral ventricle, where was found a very large clot (about the size of a hen's egg). After the removal of the clot it was noticed that the adjacent tissue was stained and studded with extravasations of blood about the size of a pin's head; the rest of the brain substance was apparently normal. The left ventricle of the heart was hypertrophied, the auricular appendix very large and prominent. The liver was enlarged and bled easily on section; the posterior surface was mottled. The kidneys were enlarged, capsules more or less adherent, and when removed left a rough surface; they were dark purplish in color and dotted here and there with spots of ecchymosis; the cortical portion was increased in thickness and the pyramids were engorged with blood. The transverse and descending colon were very much contracted. The chest and abdominal cavities were partially filled with fluid. The stomach and intestines were very much distended with gas, and portions of small intestines were congested.

## VALVULAR DISEASE OF HEART.

## CASE 1.

*Mitral—Cirrhosis of liver and kidneys.*

H. J.; aged 40 years; nativity, Nova Scotia; was admitted to the United States Marine Hospital April 28, 1894, suffering from dropsy of lower extremities and abdomen, with shortness of breath; died June 18, 1894.

*History.*—He had been serving on the schooner *Hustler*. Examination of urine showed some albumen. Diagnosis was made of chronic Bright's disease, but it was noted that there was also regurgitation and stenosis at the mitral valve. Dropsy was relieved to some extent by hydrogogue cathartics and diuretics, but patient continued to grow worse and weaker until he died.

*Necropsy (twenty-four hours after death).*—Body was of medium size and greatly emaciated. Abdomen was greatly distended. Right leg showed a solution of continuity of the skin for a space of 10 by 15 cm. Rectum everted. Post-mortem lividity marked on all dependent parts. Rigor mortis had almost entirely disappeared. The heart weighed 445 grams, and was hypertrophied and dilated, the pericardial sac distended with fluid. The left ventricle was much enlarged and its wall thickened; the right ventricle also enlarged and distended with blood. The mitral orifice was calcified and stenosed and of irregular shape, measuring in one direction 16 mm. and in another, at right angles to this, 22 mm. The valves were entirely obliterated. The surface of the orifice was roughened by the calcareous deposit, like a ring of bone. The left lung weighed 650 grams; the right, 810 grams. Both were exceedingly oedematous. The pleura was thickened and firmly attached, especially at the lower portion. The abdominal cavity was distended with a straw-colored fluid to a considerable extent; the intestines inflated with gas, and adherent to the peritoneum in a number of places. The peritoneum was thickened; the omentum discolored a dirty gray. The stomach was distended with gas, the mucous membrane greatly thickened and showing a number of petechiæ; the vessels considerably enlarged. The liver was hard and cirrhotic, and showed a very characteristic nutmeg marking. The capsule was very much thickened. The weight was 1,360 grams. The gall bladder was diminished in size, and contained very little bile. The kidneys were both lobulated and cirrhotic, being very hard and tough. The capsule was adherent. The left weighed 160 grams; the right, 170 grams. The spleen weighed 125 grams, and showed the nutmeg marking. The primary lesion in this case must have been the disease of the mitral valves, consisting of regurgitation and stenosis. The condition of the kidneys and liver was secondary to this affection.

## CASE 2.

*Mitral—Hydropericardium.*

T. D.; aged 42 years; nativity, New York; admitted to the United States Marine Hospital, San Francisco, Cal., January 15; died at 12.10 p. m. January 16, 1894.

*History.*—Patient on admittance complained of dyspnoea, general weakness, dry cough, loss of appetite, and inability to sleep. He had been unwell for years. For the past three months he had had frequent attacks of dyspnoea. Physical examination revealed marked cyanosis and coldness of extremities. The heart was found to be enlarged to the right, and the apex beat displaced downward one interspace. The sounds were feeble. There were also marked evidences of fluid in pericardial sac. The pulse was rapid (120), feeble, and thready. The respiration was rapid (about 40), but could not be counted with certainty owing to the frequency of the cough. Marked crepitations were heard over both lungs. In spite of immediate treatment, the patient rapidly declined; passed a restless night; became unconscious at daybreak, and died at 12.10 p. m. January 16, 1894.

*Necropsy.*—Rigor mortis and post-mortem lividity well marked. Nearly the entire parietal layer of pericardium was adherent to the pleura, and was rough and much thickened. The pericardial sac contained about 200 c. c. of serous fluid. The heart weighed 460 grams, and presented a red, beefy appearance. It contained a large quantity of venous blood. The right heart was dilated and its walls were very thin. The left ventricle was hypertrophied, its walls being an inch thick. The arch of the aorta was found to be healthy. The valves were normal, with the exception of the mitral, one segment of which was bound down by a contraction of the musculi papillares. The right pleura was strongly adherent to the diaphragm, and lung in a state of hypostatic congestion. The left lung was compressed, presented a number of emphysematous projections, chiefly at the apex, and showed many depressions due to collapsed lung tissue. The lower lobe was also in a state of hypostatic congestion. Both lungs floated in water. The stomach was large and its mucous coat congested. The walls were thickened and displayed a number of ulcerated patches. Liver, spleen, and kidneys normal.

## CASE 3.

*Mitral.*

L. W.; aged 50 years; nativity, New York; admitted to the United States Marine Hospital, Chicago, Ill., May 13; died November 15, 1893.

*History.*—In August, 1892, he first began to suffer with shortness of breath, which grew steadily worse, and when admitted to hospital breathing was extremely difficult. The feet and legs became œdematous; the œdema seemed to appear and disappear at long intervals. This slowly grew worse until it extended above the knees; small ulcers formed here and there on the skin of the legs and feet. Examination of heart proved the existence of mitral and aortic insufficiency, with a compensatory hypertrophy, and subsequent dilatation. The dyspnoea became steadily worse owing to œdema of the lungs. Under treatment, however, he became much improved; the œdema lessened and the heart's action became better. The improvement was only temporary, as he slowly grew weaker as the disease advanced.

*Necropsy (six hours after death.)*—Post-mortem lividity slight; rigor mortis, none. Pupils dilated. General nourishment fair. The heart weighed 930 grams. The pericardial sac was distended with fluid; quantity not measured. The aorta and mitral valves were both incompetent. The left heart was greatly hypertrophied. The pleural cavity contained a large effusion. The lungs were both congested and œdematous. There were also pleuritic adhesions to chest wall. The left lung weighed 460 grams; the right, 580 grams. There was an incarcerated right inguinal hernia, which had been operated on some months before while in this hospital, and relapsed. The liver weighed 2,150 grams. Gall bladder and ducts were distended with bile. The kidneys showed traces of a chronic interstitial nephritis. Other organs not examined.

## CASE 4.

*Mitral and tricuspid.*

D. J. (colored); aged 71 years; nativity, Ohio; admitted to the United States Marine Hospital Memphis, Tenn., June 22, 1892; died July 22, 1893.

*History.*—This patient was pretty well broken down when admitted to the hospital, the effect of vicious habits and disease. He gave a history of having contracted syphilis twelve years before, and had been a hard drinker. He was suffering severely from the effects of both valvular disease of the heart and chronic pleurisy of the left side. Under good care and medication he became much more comfortable, and his life was prolonged more than a year. The symptoms of pleurisy nearly subsided, and death was caused by the disease of the heart. Besides the congestive symptoms of the heart disease, he suffered a great deal from digestive disturbances, with alternating diarrhoea and constipation.

*Necropsy (five hours after death).*—No post-mortem lividity. Rigor mortis absent. General nourishment poor. Pupils moderately dilated. Anasarca was present in the lower portion of the body from the waist down, and in the arms and hands. The heart weighed 374 grams. The pericardial sac was filled with serum. The aortic and pulmonary valves were competent. The mitral and tricuspid valves were incompetent. The anterior cusp of the mitral valve was large and thick. The posterior cusp was reduced to a narrow strip on the border of the opening, and its free border had the appearance of ulceration. The borders of the cusps of the tricuspid valve were thickened and rough, and affected with what appeared to be recent inflammation and small vegetations of recent formation. The left ventricle was much hypertrophied. Both pleural cavities were obliterated by very firm adhesions. The lungs were not removed. They were congested and œdematous. The liver was of a lighter color than normal. It was the nutmeg liver, with apparently considerable fatty degeneration. It weighed 1,626 grams. The gall bladder contained very dark, viscid bile and about a dozen gallstones of various sizes. The left kidney weighed 165 grams; the right, 161 grams. The parenchyma of the kidneys was very pale in color, affected apparently with fatty degeneration. The spleen weighed 291 grams; its malpighian bodies were enlarged and nodular in feel. The other organs were not examined.

## CASE 5.

*Mitral and aortic.*

R. C. (colored seaman); admitted to the United States Marine Hospital, Cincinnati, Ohio, February 1, 1893, for rheumatism.

*History.*—He had some dullness over both lungs; dyspnœa; œdema of lower extremities; albumen in urine; cardiac hypertrophy and a systolic apex murmur. After two months' treatment his condition improved, and he was discharged April 3, 1893. Was readmitted to hospital May 22, 1893, suffering from same trouble, except symptoms were all more marked. Dyspnœa, palpitation, and cardiac distress were greater; ascites, œdema of extremities, and albumen were present, together with digestive trouble. Rheumatism better. Under the use of digitalis and purgatives his general condition improved and he had periods of comparative comfort. On the morning of the day of his death he complained of severe headache and pain in his neck and back, and grew apathetic; had muscular spasm and gradually became unconscious, the onset of the latter symptom being accompanied by the appearance of clonic convulsions of the upper extremities, retractions of head, and frothing at the mouth. Patient died December 31, 1893.

*Necropsy (eighteen hours after death).*—Rigor mortis well marked; lividity absent; general nutrition good. Heart: Walls greatly hypertrophied; weight, 550 grams; pericardium thickened and opaque on visceral surface. The sac contained 100 c. c. of thin colored fluid. Mitral valve thickened and incompetent; aortic only slightly thickened; ascending aorta atheromatous and thickened. Lungs were normal excepting slight adhesion at left apex, with a cicatrix. Kidneys presented appearance of fatty degeneration. Death due to uræmic poisoning.

## CASE 6.

*Mitral and aortic. Oedema of lungs.*

J. L.; aged 22 years; nativity, Virginia; admitted to marine ward, German Hospital, Philadelphia, January 24, 1894, suffering from an irritable cough and attacks of pain over right chest. His temperature was 38.4° C., which varied very little until his death.

*History.*—He gave history of having contracted syphilis several years ago. Gave no history of rheumatism. The patient complained of some dyspnœa, but had no pain over the heart. On physical examination there was found a slight bronchitis

and a loud double murmur was heard over the heart, which was diagnosed to be aortic and mitral regurgitation. The heart was considerably enlarged. The treatment consisted of carbonate of ammonia, cough mixture, and infusion of digitalis. The patient rested quietly on the evening of January 29 and seemed in good condition. On the morning of January 30 he had a severe attack of coughing and expectorated a large quantity of mucus, mixed with blood; respirations became very rapid, 90 to the minute; the pulse was strong and of high tension. The lungs began to fill rapidly. The patient was cupped over right and left chest and stimulants were administered, but in spite of treatment he died about four hours after the attack of coughing.

*Necropsy.*—Rigor mortis was well marked. Very dense adhesions were found over both lungs. Lungs were very œdematous, but otherwise normal. Heart was very much enlarged; the pericardium very adherent and could not be separated from the heart. The right side of the heart was very much hypertrophied; the left side was dilated. At the base of the aortic valve a vegetative endocarditis was beautifully marked, the valve being almost entirely destroyed. The mitral valve was incompetent. The liver was enlarged and fatty. The spleen was also enlarged and soft. The kidneys were very much congested, but no evidence of any other lesions were found. The patient evidently died from œdema of the lungs, brought about by an attack of acute endocarditis.

## CASE 7.

*Mitral and aortic.*

F. S.; aged 30 years; nativity, New York; admitted to the United States Marine Hospital, Chicago, Ill., September 5; died September 29, 1893.

*History.*—When admitted was suffering with extensive œdema of lower limbs, dyspnoea, etc. Valvular incompetency of mitral was discovered on examination. Œdema became worse and jaundice developed as the disease progressed. Although he seemed to improve under treatment, he died suddenly, September 29, 1893.

*Necropsy (nine hours after death).*—Post-mortem lividity absent. Rigor mortis slight. General nourishment good. Pupils dilated. Weight of heart, 490 grams. Aortic valves incompetent and covered with vegetations. The mitral valve was also incompetent. The left ventricle was dilated somewhat and its wall hypertrophied. The pericardium contained an abnormal amount of fluid. The lungs were congested and the pleural cavity contained fluid. Anterior border of right lung contained a small infarction 4 cm. in diameter. Left lung weighed 580 grams; right, 630 grams. The liver was congested, fatty, and discolored with bile of a yellow-red color and weighed 2,035 grams. Gall bladder and ducts filled with bile. The kidneys were congested and the uriniferous tubules were plainly visible. The right and left kidney each weighed 180 grams. The spleen weighed 200 grams. There was extensive œdema of feet and legs.

## CASE 8.

*Mitral and aortic—Aortic aneurism—Rupture.*

P. S.; aged 57 years; nativity, Germany; admitted to the United States Marine Hospital, San Francisco, Cal., November 24; died November 28, 1893, at 5.15 o'clock a. m.

*History.*—On admittance stated that he was suffering from a severe cold and had been ill two months. He had cough, dyspnoea, and dropsy of lower extremities. Sleeps but little and had to sit up all the time. Had been healthy all his life with the exception of an attack of rheumatism one year ago. Physical examination showed some hypertrophy of heart; systolic mitral murmur present. Feet, legs, and thighs are œdematous.

*Necropsy (eight hours after death).*—Lower extremities very œdematous; no discoloration of body; rigor mortis not well marked. Heart: Pericardial sac filled with



bloody serum; heart hypertrophied; mitral valve incompetent; slight incompetence of aortic valve; an aneurism (sacculated) found springing from transverse portion of arch of aorta, about 3 inches in diameter and filled with laminated fibrin. The aneurism was adherent to the edges of both lungs. A small rupture was found on posterior surface of aneurism. Pleural cavities of lungs filled with serum and blood. Lungs were congested; otherwise normal. Liver was congested; also spleen. Kidneys deeply congested.

## CASE 9.

*Ulceration of aortic valve—Lobar pneumonia.*

J. B. (colored); aged 37 years; nativity, Kentucky; admitted to the United States Marine Hospital, Memphis, Tenn., March 8; died March 22, 1894.

*History.*—The patient's symptoms through the course of his fatal illness were varied and obscure, and it seems impossible to lay them to a single cause. He had fever, which was thought at first to be malarial, but which took a very irregular course, sometimes appearing to be hectic, and rose to 41° C. just before death. He had, on admission, great tenderness in the hepatic region, slight enlargement of the liver, slight icterus, moderately severe bronchitis, and a systolic heart murmur, heard over the aortic valve, and denoting obstruction. He had been sick about six days, having been seized with a chill after undergoing heavy labor and exposure. Pneumonia in the upper lobe of the right lung developed while the patient was in the hospital. At one time it was thought that there might be abscess of the liver, and an exploration was made, but without result.

*Necropsy (eight and one-half hours after death).*—No post-mortem lividity; rigor mortis present; general nourishment good; pupils slightly dilated. The heart weighed 390 grams. The pericardium was slightly injected along the left border of the heart. The valves, except the aortic, were competent. The aortic valve was inflamed and ulcerated. There were large vegetations upon the cusps, and two of them were perforated through the center, and at the base of the third the endocardium was ulcerated. No evidence of endocarditis was discovered elsewhere. The wall of the left ventricle was much hypertrophied. The left lung weighed 469 grams; its pleural cavity was normal. It was hypostatically congested in the lower lobe. The right lung weighed 950 grams. It was extensively adherent to the chest wall, but could be separated therefrom without tearing. The upper lobe was in a condition of gray hepatization; the middle one was normal; the lower one was congested. In the abdominal cavity there was localized peritonitis over nearly the whole of the upper surface of the liver, or, rather, there were firm adhesions there, the result of perihepatitis. This inflammation must have centered at about the place of passage of the vena cava, as a patch of the diaphragm and a coil of intestine at this place could not be separated from the liver, so firmly were they attached. The mucous membrane of the lower part of the ileum was examined, and Peyer's patches were found to be healthy. The mucous membrane of the descending colon was also examined, and no ulcers nor evidences of inflammation were found. The liver was very large, but was natural in color; it was unusually firm in consistence; it weighed 2,210 grams. The pancreas weighed 158 grams and was of very firm consistence, though normal in appearance. The left kidney weighed 197 grams; the right, 198 grams. Both were normal in appearance. The spleen weighed 445 grams, being about double the normal size; its tissue was very dark in color. A supernumerary spleen was found in the belly of the size and shape of a marble and of 1.5 grams weight. It was attached by loose tissue to the tail of the pancreas, beneath the peritoneum and entirely separate from the main spleen.

## CASE 10.

*Rupture.*

J. C.; aged 42 years; nativity, Massachusetts; admitted to the United States Marine Hospital, Boston, Mass., April 25, 1894, suffering from cough, dyspnoea, oedema of feet and legs, and general anemia. Had been treated in this hospital on previous occasions for tubercle of lungs. On nights of April 28 and 29 he complained of asthma and was given morphine. On afternoon of the 30th, while lying in bed, he suddenly fell over side of bed, striking the floor. He then got up himself and lay on bed again. When seen a few minutes later he was struggling for breath; head thrown back; froth issuing from mouth and nose; face pale; muscles of chest fixed and hard, the thorax not moving at all during respiration. Heart sounds could not be heard; pulse at wrist could be felt, but was not strong. No pulse at all in temporals. Right jugular pulsating strongly; left not at all. Pupils normal. Died about thirty minutes later.

*Necropsy (sixteen hours after death).*—Body of white male; pale and emaciated. Post-mortem lividity marked in dependent parts. Rigor mortis marked; no cicatrices. Larynx and trachea congested. On opening thoracic cavity the pericardium bulged into the open space. This cavity was found to contain a large quantity of dark fluid blood, distending sac to its utmost capacity. Heart was covered with a layer of fat about one-half inch thick. The organ itself was very much hypertrophied and its cavities enlarged. Substance of heart infiltrated with fat and exceedingly friable. Mitral valve hard and unyielding; stenosis of orifice. Tricuspid valves incompetent; other valves normal. In the anterior wall of left ventricle, near septum, was a tear about 4 or 5 cm. in length, running vertically and extending into cavity, but larger outside than inside, this rupture of heart causing death. Weight of heart, 680 grams. Lungs slightly tubercular. Weight of right, 1,000 grams; of left, 770 grams; both congested. Kidneys granular and tubercular; weight of right, 175 grams; of left, 170 grams. Liver congested; weight, 1,750 grams. Spleen weighed 120 grams. Cerebral membranes congested slightly. Weight of brain, 1,250 grams.

## ANEURISM OF THE THORACIC AORTA.

## CASE 1.

E. W. A. (colored); aged 35 years; nativity, Jamaica; admitted to the United States Marine Hospital, San Francisco, Cal., February 17; died June 21, 1894, at 10.45 p. m.

*History.*—On admittance patient complained of vague pains in the chest, cough, loss of appetite, and occasional vomiting. At first nothing distinctive could be made out and he was treated for rheumatism. Subsequently the symptoms changed and various diagnoses were entertained, such as mediastinal tumor, tubercle of lung, pneumonia, and bronchitis. He was discharged improved on April 3. On readmission, May 8, 1894, patient complained of illy defined thoracic pain, attacks of dyspnoea, and gastric disturbances. Examination of chest showed a great variety of rales in various parts, a diffuse pulsation over the manubrium sterni, synchronous with the heart beats, and an indistinct bruit, best heard at the right sterno-clavicular articulation. A diagnosis of aneurism of the arch of the aorta was made at the time, without other physical signs or symptoms. The bruit referred to was systolic and disappeared in a few days. The aortic second sound was accentuated. There was no differences in radial pulse of either side, no difference in pupils, no engorgement of veins of the neck, no unilateral vaso-motor disturbances, nor any evidence of bruit or tumor in the back. Patient soon developed a ringing cough and persistent and uncontrollable attacks of hiccoughs. On May 15 patient described a sensation as of a large lump in region of arch of aorta which he could not cough up. On May 25 the region over the left lung had a flat dullness on percussion. He

rise in temperature, no increase in mensuration over the other side. On auscultation the breath sounds were absent; no air entered the lung. Pain, dyspnoea, and hic-cough kept up almost unceasingly. On the night of June 21 patient suddenly sprang out of bed and immediately lost consciousness. He was covered with a cold sweat; the pulse became rapid, thready, and soon could not be felt.

*Necropsy (twelve hours after death).*—Rigor mortis. Body wasted. Heart normal. Right lung sound. Left lung in a condition of atelectasis and sank in water. Bronchus (large) had been occluded by aneurism. On section found a few soft, cheesy spots in upper and middle part of lung. There was an ellipsoidal, saccular-shaped aneurism springing from posterior portion of transverse arch of the aorta. Measurements taken in the transverse and longitudinal axes were 10 cm. by 15 cm. Pericostum was eroded from anterior surface of bodies of third and fourth dorsal vertebræ. The tumor was made up of blood clots in different stages of organization and had ruptured into the oesophagus. The stomach was found distended with arterial blood. The blood when removed was clotted, formed a perfect mold of the stomach, and weighed 960 grams. The splenic capsule was broken by gentle efforts to remove spleen from abdomen. The pulp was pultaceous in consistency and dark in color. Liver slightly enlarged. Kidneys healthy.

#### CASE 2.

J. R.; aged 50 years; nativity, Massachusetts. Admitted to marine ward, St. Vincent's Hospital, Norfolk, Va., March 17; died June 18, 1894.

*History.*—Patient suffered with severe pain in shoulder and back, dyspnoea, and was very anemic. The pulse in the left arm was much smaller than that in the right. Percussion revealed dullness on the left side, but at no time could any murmur be recognized. There was no pulsation or thrill.

*Necropsy (eleven hours after death).*—Body fairly nourished; post-mortem lividity marked; rigor mortis slight. Lungs normal. Heart was hypertrophied. The ascending portion of the arch of aorta was much dilated. An aneurism 8 cm. in diameter was found involving the transverse and descending portions of the arch. It was partially filled with layers of fibrin, and had caused erosion of the fourth and fifth dorsal vertebræ. The abdominal viscera were normal.

#### CASE 3.

W. B. (colored seaman); admitted to the United States Marine Hospital, Cincinnati, Ohio, July 1, for thoracic aneurism. Went out on the 6th and returned on the 14th, much worse. Tumor larger; pulsation stronger and more noticeable; no bruit. From time of last admission to time of death symptoms grew progressively worse; pain more marked; dyspnoea increased and phonation interfered with. Death occurred suddenly October 27, 1893, at 8 p. m.

*Necropsy (twelve hours after death).*—Height, 5 feet 6 inches. Rigor mortis and lividity marked; general nutrition good. Pupils dilated. Large cicatrix from burn on right forearm, extending from elbow to dorsum of hand and causing contraction of middle, ring, and little fingers. There was a large oval swelling on the left side of chest anteriorly, extending from first to sixth rib and laterally 1 inch to the right of sternum. Covering of tumor thin. On opening thorax found absorption of parts of second, third, fourth, fifth, and sixth ribs and part of sternum from pressure. Sac of aneurism composed of entire transverse arch of aorta and filled with coagula and fibrin. Ascending arch of aorta was atheromatous. Weight of heart after opening, 448 grams; pericardial fluid slightly increased; no adhesions; valves normal, except aortic, which was in a condition of relative insufficiency. Anterior mediastinum filled with blood. Pleura adherent on left side, with increase of fluid on both sides. Both lungs were oedematous and compressed. Other viscera not examined. Death from internal hemorrhage. Iodide of potassium was administered in large doses, and rest in the recumbent position was tried without marked improvement.

## CASE 4.

J. S.; aged 40 years; nativity, United States; admitted to marine ward, Sisters of Charity Hospital, Buffalo, N. Y., March 30; died May 1, 1894.

He applied for relief on account of shortness of breath and fainting spells. Auscultation revealed a harsh systolic murmur in mitral area. He had severe attacks of pain over cardiac region.

*Necropsy (seven hours after death).*—Lungs and pleuræ normal, excepting two small adhesions on right side. There was an aneurismal sac projecting into right auricle, having its origin in one of the sinuses of Valsalva. Excepting an enlargement of right auricle, the aneurism did not affect the external appearance of the heart. The aneurism occluded the orifice of right coronary artery by the laminated blood clot formed in the sac. The aortic valves were competent by the hydrostatic test. Pulmonary and tricuspid valves normal. Mitral orifice constricted, not admitting two fingers, and one of the cusps was adherent to contiguous endocardium, presenting complete closure of the valve. Brain normal.

## RUPTURE OF A BRANCH OF THE LEFT CORONARY ARTERY.

D. S.; aged 62 years; nativity, New Hampshire; admitted to the United States Marine Hospital, Vineyard Haven, Mass., April 21, 1894.

*History.*—Patient, while in good health and in the performance of his duties, was suddenly taken with a pain over his heart. He complained of great dyspnoea and soon sank into unconsciousness. On admission to hospital patient was in collapse. Examination showed that the trouble was probably cardiac, as flatness was found on percussion over a large triangular space, as in second stage of pericarditis. Heart sounds were inaudible and a slight heaving impulse was noticeable over body of heart. Patient died suddenly early next morning.

*Necropsy (twenty-eight hours after death).*—Body large and well nourished; but slight rigor mortis. Brain normal; fluid somewhat excessive. Heart large and fatty; no valvular trouble; pericardium filled with blood, which was found to have come from rupture of a small branch of left coronary artery. Ante-mortem clots found in heart. Lungs congested; otherwise normal. Liver, large and fatty. Kidneys very large and fatty; hemorrhagic spots in cortex. Stomach congested and inner coat much thickened. Intestines normal.

## LOBAR PNEUMONIA.

## CASE 1.

M. B.; aged 33 years; nativity, Kentucky; admitted to the United States Marine Hospital, New Orleans, La., January 2; died January 6, 1894.

*History.*—The patient was taken sick December 28, 1893, complaining first of pains in chest, back, and limbs, severe headache, and persistent diarrhoea and vomiting. On physical examination the upper lobe of right lung was found to be consolidated, and later the lower lobe likewise became involved. The cough was slight and the sputum was not tinged with blood. The temperature at no time exceeded 39.6° C.; the pulse ranged from 96 to 115 per minute and the respirations from 30 to 48.

*Necropsy (thirteen hours after death).*—Body that of a muscular, well-nourished negro man. Rigor mortis marked. The heart contained large ante-mortem clot in right side, left side comparatively empty; cardiac veins much engorged; weight of heart, 300 grams. Lungs: Right normal; weight, 350 grams; upper lobe of left lung in stage of gray hepatization, lower lobe in second stage, and middle lobe oedematous; weight of lung, 1,940 grams. Stomach dilated; capacity 3,700 c. c.; intensely inflamed along the lesser curvature. Small intestine congested in the lower portion of the ileum. Large intestine inflamed in descending colon and sigmoid flexure. Liver normal; weight, 2,080 grams. Kidneys pale in color; weight of right, 226 grams; of left, 230 grams. Spleen normal; weight, 180 grams.

## CASE 2.

J. J. M.; aged 24 years; nativity, Mississippi; admitted to the United States Marine Hospital, New Orleans, La., December 21, 1893; died January 2, 1894.

*History.*—On admission patient stated he had a severe chill five days before, followed by fever and pain in his right side. When admitted, temperature,  $39.6^{\circ}$  C.; pulse, 100; respiration, 44; complained of pain in right side; appetite poor; bowels irregular. On percussion dullness was found over middle lobe of right lung, extending to lower lobe of right lung. Cough very annoying; sputum rusty. Vomiting frequently occurred, and at times diarrhœa was quite troublesome. Delirium was frequent at night.

*Necropsy (nine hours after death).*—Rigor mortis well marked. Body that of a fairly well-nourished young negro man. The middle and lower lobes of right lung were in the stage of red hepatization, upper lobe congested. Upper lobe of left lung œdematous, lower lobe congested. Weight of right lung, 1,020 grams; left lung, 780 grams. Both pleuræ were roughened and inflamed, and numerous adhesions were found on both sides. The heart was pale and fatty, and the cavities of both sides were distended with post-mortem clots; no chicken-fat clots were found; weight, 390 grams. The pericardium was congested and contained about 100 c. c. of serous fluid. The liver was slightly enlarged and congested; weight, 2,580 grams. The kidneys were both congested; weight of right kidney, 220 grams; of left, 230 grams. Spleen dark purple in color, intensely congested, very friable; its fractured face was granular in appearance; weight, 420 grams.

## CASE 3.

D. A.; aged 34 years; nativity, Sweden; admitted to the United States Marine Hospital, Port Townsend, Wash., May 26; died June 3, 1894.

*History.*—The patient was slightly delirious when admitted, and gave as a history that he had been perfectly well until three days previous to admission into hospital, at which time he was taken suddenly sick with a chill, followed by profuse perspiration and headache. However, it was subsequently learned from his friends that he had not been perfectly well for two weeks. When admitted he had only a slight rise of temperature, headache, constipation, was exceedingly nervous, and had continuous profuse sweating. A pneumonic spot the size of a dollar was found at the base of lower lobe of the right lung. On the afternoon of the next day the temperature ran up to  $39.4^{\circ}$  C., but dropped to  $36.4^{\circ}$  C. the next morning. He grew rapidly worse, the temperature jumping up and down every hour as long as he lived. He was saturated with perspiration all the while. He died eight days after coming into the hospital.

*Necropsy (fourteen hours after death).*—The body was well nourished. Rigor mortis not well marked. The abdomen distended. The heart and left lung were normal, but the lower lobe of the right lung was completely consolidated. The intestines were very much distended with gas. Peyer's patches were ulcerated, and the mucous membrane near them was also ulcerated and sloughing. There was no perforation. The spleen, liver, and kidneys were enlarged and friable.

## CASE 4.

S. S.; aged 18 years; nativity, Arkansas; admitted to the United States Marine Hospital, New Orleans, La., December 4; died December 10, 1893.

*History.*—On November 29 the patient suffered from a violent chill, followed by severe headache, fever, pain over chest, and a troublesome cough. On admission the expectorated matter was found to be tinged with blood, and a physical examination revealed the presence of a lobar pneumonia involving the middle and lower lobes of the right lung. The chest was enveloped in a cotton jacket, and stimulants, stimulating expectorants, and general supportive treatment were employed without  
il.

*Necropsy (four hours after death).*—Body that of a well-nourished, muscular negro lad. Rigor mortis present. The heart was covered with an abundant fibrinous exudation, giving its surface a honeycombed appearance, and its cavities contained very large and firm coagula; weight, 410 grams. Left lung normal; weight, 490 grams. Right lung: Lower and middle lobes consolidated; weight, 1,420 grams; numerous pleuritic adhesions were seen, and a large amount of effusion into the pleural cavities. The liver was mottled in appearance and seemed congested; weight, 2,400 grams. Right kidney normal; weight, 190 grams; left normal; weight, 220 grams. Spleen normal; weight, 330 grams.

## CASE 5.

K. H.; aged 39 years; nativity, Louisiana; admitted to the United States Marine Hospital, New Orleans, La., December 7; died December 15, 1893.

*History.*—On December 3, while working aboard his vessel, he suffered a severe contusion of the right shoulder and chest, and has had severe cough and bloody expectoration ever since. On admission to hospital the upper lobe of right lung was found to be consolidated; expectoration bloody; pain severe; great prostration; pulse, 100; respiration, 36; and temperature, 38.4° C. The usual treatment for lobar pneumonia was employed without avail.

*Necropsy (six hours after death).*—Body that of a muscular, fairly well-nourished negro man. Rigor mortis well marked. Left lung normal; slight pleuritic adhesions. Right lung firmly adherent to chest wall in its upper and middle portions. Upper and middle lobes consolidated, and a small area the size of a hazelnut was gangrenous. Weight of right lung, 1,090 grams; left lung, 510 grams. Heart normal; weight, 290 grams. Liver enlarged, congested; weight, 2,560 grams. Kidneys normal; weight, left 190 grams, right 200 grams. Spleen soft and flabby; weight, 220 grams.

## CASE 6.

V. B.; aged 29 years; nativity, Virginia; admitted to the United States Marine Hospital, Boston, Mass., September 23; died September 29, 1893.

*History.*—He had been suffering from cold for two weeks. Had a chill day before admission. Pain in chest, stomach, and head. Physical examination showed him to be suffering from lobar pneumonia in upper lobe of right side, and slightly on left side. Left lung subsequently cleared up. Patient became aware of his condition on September 25, and thenceforward absolutely refused to take any food or medicine, and occasionally had attacks of delirium so severe that one night he had to be strapped in bed. The only medication that he received after September 25 had to be administered hypodermatically.

*Necropsy (three hours after death).*—Body that of a medium-sized, well-developed colored male; very muscular. No cicatrices. Earrings in lobes of ears. Fouled anchor tattooed on back of left hand. Post-mortem lividity slight. Rigor mortis marked. General nourishment good. Pericardial sac contained about 50 c. c. of fluid. All valves competent. Ante-mortem clot in both ventricles. Clot very firm and adherent to chordæ tendinæ. Heart after opening weighed 265 grams. Ante-mortem clot in thoracic aorta. Pleural cavities entirely free from adhesions. Left lung collapsed and congested, especially posteriorly; weight, 302 grams. Inflammation of second stage of pneumonia; red hepatization in entire upper lobe of right lung; also small infarct. Middle lobe slightly congested, but otherwise quite normal. Hypostatic congestion of lower lobe; weight, 900 grams. Stomach contracted and entirely empty. Liver dark red in color and congested; weight, 1,470 grams. Gall bladder distended. Kidneys slightly congested; otherwise normal; capsule readily detached; weight of left, 150 grams; right, 130 grams. Spleen somewhat enlarged and congested; weight, 260 grams.

## CASE 7.

S. L.; aged 55 years; nativity, Louisiana; admitted to the United States Marine Hospital, New Orleans, La., April 19; died April 21, 1894.

*History.*—For three months previous to admission to hospital the patient had suffered from malarial fever, with occasional night sweats. About April 12 he suffered from a severe chill, followed by pain in left chest, headache, cough, and brownish expectoration. From this time until April 19 he remained at home, receiving little, if any, treatment. On admission to hospital he complained of pain over chest, cough, shortness of breath, and great prostration. On physical examination the left lung was found to be consolidated throughout. Temperature,  $39.8^{\circ}\text{C}$ .; respiration, 56, and pulse, 116.

*Necropsy (eight hours after death).*—Body that of a muscular middle-aged negro man, fairly well nourished. Rigor mortis extreme. Right lung normal; weight, 380 grams; a few old pleuritic adhesions posteriorly. Left lung consolidated throughout both lobes; numerous recent adhesions over entire surface; weight, 2,320, grams; the lung was extremely friable, and from its fractured surface a quantity of thick fluid, a dirty gray in color, exuded on slight pressure, showing it to be in the stage of purulent infiltration. The heart was pale and fatty; left cavities filled with firm clots; right comparatively free from clots. The pericardial fluid increased to about 150 c. c. The liver appeared normal; weight, 1,520 gram. The gall bladder was entirely empty. Left kidney normal; weight, 260 grams; right kidney normal; weight, 250 grams. Spleen pale and flabby; weight, 210 grams.

## CASE 8.

J. J. H.; aged 39 years; nativity, Virginia; admitted to the United States Marine Hospital, Baltimore, Md., January 6; died January 10, 1894.

*History.*—Was taken sick six days before admittance, and became worse each day afterwards. Had chills every day for three days previous to his entrance. January 6 he complained of sharp pain in left side, which increased during coughing and taking a deep inspiration. Appetite very poor. Bowels very loose—three or four stools daily. Temperature,  $40^{\circ}\text{C}$ .; pulse, 96. January 8, bowels very loose; moved five times during the day; temperature,  $39.6^{\circ}\text{C}$ . January 9, had several passages during night. Coughed a great deal; sputa streaked with blood and purulent in appearance. January 10, temperature,  $40^{\circ}\text{C}$ .; pulse, 134; very weak; respiration 52 per minute, short and quick. Sputa very dark. Died at 10 o'clock.

*Necropsy (twelve hours after death).*—Rigor mortis marked. Body slightly emaciated. Heart normal; weight, 500 grams; contained an ante-mortem clot. There were extensive adhesions of the left lung, being tightly bound down to parietes and pericardium. The lower portions of each lobe were congested and crepitated on pressure. The upper portion of either lobe contained tubercular deposits. The bronchi were much congested; weight, 1,000 grams. The lobes of the right lung were adherent to each other; weight, 3,000 grams. The upper part of superior lobe crepitated on pressure and floated in water. The middle lobe sank in water and contained a large quantity of purulent matter. The lower lobe sank in water, and the whole of lower part was one large abscess, the remaining upper portion being infiltrated with pus. The parenchyma of lung was very soft and easily torn. The walls of the abscess were ragged and flabby. Liver: Weight, 4,250 grams; had a mottled appearance and areas of fatty degeneration. Kidneys: Weight of each, 192 grams; were enlarged and congested; the line of demarcation between cortical and medullary substances was obliterated; the capsules stripped easily.

## CASE 9.

J. M.; aged 46 years; nativity, Ireland; admitted to the United States Marine Hospital, San Francisco, December 13; died December 19, 1893.

*History.*—Malaise for two weeks previous to admission, with frequent chills, pains in the right side of chest, slight cough, headache, backache, and general weakness.

On second day was found to have lobar pneumonia of right side. December 17, was slightly delirious during the day and night and required constant watching. December 19, grew steadily weaker and died in the afternoon.

*Necropsy (seventeen hours after death).*—Post-mortem lividity and rigor mortis marked. General nourishment good. Pupils dilated. The heart weighed 430 grams. Pericardial sac appeared normal. The right lung was deeply congested and showed pneumonic exudation over entire lower lobe, which was of a cherry-red color. The right lung weighed 1,870 grams; the left, 699 grams, and was slightly congested. A slight inflammation of the pleural surfaces was apparent, but there was no exudate. The liver was greatly and irregularly enlarged, fatty, and of a reddish-brown color; it weighed 2,260 grams. Gall ducts and bladder empty. The kidneys weighed—right, 230 grams; left, 210 grams; both inflamed. The spleen was congested and slightly enlarged; weight, 235 grams.

#### CASE 10.

##### *Pleurisy, ulcerative endocarditis, and nephritis.*

J. W. (colored); aged 49 years; nativity, Jamaica; admitted to the United States Marine Hospital, San Francisco, October 6; died October 25, 1893, at 7 o'clock a. m.

*History.*—On admission he complained of pain in left side of chest. The pain was very acute and was rendered much worse by taking a deep inspiration. The pain appeared only four days previous to admission. Said he had had gonorrhœa for eighteen months. Complained of a urethral stricture. The only physical sign present was a pleuritic friction sound. Urine was loaded with pus and albumen, and also diminished in quantity. Temperature on admission, 38° C.; for four days following it remained at 39° C., then fell to normal, remaining so until October 20 (nine days). During this period he felt quite well and coughed but little. On October 16 he had a copious diarrhœa, which soon abated. On the morning of October 20 his temperature suddenly rose to 40° C. He had no chill, but had a violent attack of hiccoughs, which continued all day. A physical examination showed increased tactile fremitus, dullness, crepitations, and tubular respiration over left lower lobe. There was also a grazing pleuritic friction sound. There was a friction sound over left border of heart synchronous with the heart's pulsation. His cough became quite violent and he vomited a great deal. On October 23 he complained of pain over right lung. Physical examination showed increased tactile fremitus, dullness, crepitations, and tubular respiration, best marked posteriorly. His heart was laboring. His stomach all the time was very irritable and he could retain no food. He remained about the same until the afternoon of October 24, when he became much worse and continued to decline until the morning of October 25, when death occurred. He was semicomatose for about twelve hours preceding death.

*Necropsy (thirty hours after death).*—Rigor mortis not excessive. Heart was normal in size; walls were engorged and veins much distended; two large patches of fibrinous exudation on wall of right ventricle and one small patch of exudation on wall of left ventricle. No effusion in pericardial sac; small amount of ante-mortem clot adherent to mitral valve; aortic valve competent; large amount of a yellowish-green, semigelatinous material occupied cavities of right ventricle and auricles and extended several inches into pulmonary arteries and inferior vena cava. There was an ulcerative endocarditis on right side of heart, the tricuspid valve being mostly affected. Lungs: Many recent pleuritic adhesions on left side of thorax; none on right side; no effusion. Upper lobe of the left lung crepitant; no crepitation could be elicited over lower lobe. On section the lower lobe appeared in a state of gray hepatization; considerable pus flowed from incised portion. A section sank in water. Crepitation could be elicited in right lung except over middle lobe. Middle lobe presented appearances of a pneumonia in stage of gray hepatization; lower lobe much congested. The pleuræ on both sides were covered with a yellowish-green fibrinous exudate. Liver was congested. Spleen was very small. Kid-



neys: Left weighed 140 grams; right, 90 grams, both presented appearances of an acute parenchymatous nephritis. Bladder was much contracted and walls thickened, the capacity being about 40 c. c. The walls were about 2 cm. in thickness.

#### CASE 11.

##### *Pericarditis.*

J. J. L.; aged 36 years; nativity, Massachusetts; admitted to the United States Marine Hospital, Boston, Mass., May 21, 1894, suffering from lobar pneumonia; died May 23, 6 a. m., forty hours after admission.

*Necropsy (five hours after death).*—Body muscular. Nutrition excellent. Rigor mortis slight. Post-mortem lividity very marked on limbs, back, neck, and face. Pericardial sac distended with straw-colored fluid, containing shreds of fibrin. Heart weighed 490 grams, and was covered with fibrinous exudation, as was inside of pericardial sac—fibrinous pericarditis. Valves also covered with fibrinous exudation, thereby rendering the mitral incompetent. Right auricle dilated and contained clot, which extended into ventricle and pulmonary artery. Bronchial tubes inflamed. Right lung in state of red and gray hepatization; left congested and oedematous. Weight of left lung, 535 grams; weight of right, 1,220 grams. Pleura inflamed and covered with fibrin, as was right lung, the fibrin forming a complete covering one-fourth inch thick. Liver congested; weight, 2,730 grams. Gall bladder distended with bile. Kidneys red; typical pneumonic kidney; weight of left, 270 grams; of right, 250 grams. Urinary bladder contained small quantity of urine. Spleen enlarged, soft, and pulpy; weight, 325 grams.

#### CASE 12.

##### *Tubercle of lung and kidney (miliary).*

I. J.; aged 23 years; nativity, Missouri; admitted to the United States Marine Hospital, New Orleans, La., February 23; died February 26, 1894.

*History.*—On admission to the hospital the patient complained of malaise and cough, from which he had suffered for about four weeks. Almost immediately after his arrival at the hospital he suffered from a severe chill, accompanied by fever, and symptoms of pneumonia, involving first the upper and then the lower lobes of right lung, rapidly developed.

*Necropsy (fifteen hours after death).*—Body that of a well-developed young negro man. Rigor mortis marked. Heart pale in color and somewhat fatty; right cavities engorged; chicken-fat and post-mortem clots found in both sides; valves normal; weight, 330 grams. Pericardial fluid increased to about 75 c. c. Right lung in second stage of pneumonia throughout; pleuritic adhesions very numerous and firm; weight of lung, 950 grams. Left lung contained numerous deposits of miliary tubercle near apex; lower lobe congested; pleuritic adhesion slight; weight of lung, 950 grams. Liver normal; weight, 1,980 grams. Left kidney normal; weight, 220 grams. Right kidney contained tuberculous deposits (miliary) in the cortical portion of its middle segment; weight, 180 grams. Spleen normal; weight, 250 grams.

#### CASE 13.

##### *Pericarditis.*

J. M.; aged 57 years; nativity, Ireland; admitted to the United States Marine Hospital, Baltimore, Md., December 13; died December 28, 1893.

*History.*—On the day of admission patient stated that he had been sick with a "bad cold" for two weeks before coming to hospital; also said that three days before he fell and hurt himself in the right side of chest, and since that time he began to feel worse. The temperature on the day of admission was 38° C., and it was 38° C. again on the evenings of the 14th and 16th, and from the latter date to the evening of

the 20th temperature was normal, and patient seemed to be improved and said he was feeling much better; his appetite was good. On the morning of the 21st he had a chill, and that evening his temperature went up to  $38.8^{\circ}$  C. and his pulse to 120, and during that night the pain in the chest was greatly increased. Physical examination the following evening revealed dullness on percussion over the lower right side of chest, and on auscultation crepitant, mucous rales and a rubbing or friction sound were heard on the posterior part of the right side of chest. The sputa that day was somewhat rusty. Temperature,  $38.8^{\circ}$  C.; pulse, 120 per minute. On the 25th pain in side of chest was very severe, and from this time on the sputa was somewhat dark in color. On auscultation December 26 rales were heard both at the end of inspiration and expiration.

*Necropsy (thirteen hours after death).*—Rigor mortis well marked. Body well nourished. Pericardial sac was filled with a large quantity of yellowish fluid. The heart and pericardium had a marked roughened appearance; this roughness was easily peeled off, leaving a smooth, shining surface. From the apex to the base of the right lung, and adherent to it, were here and there patches of coagulated serum resembling fat. The right lung (two lower lobes) was adherent to the side of chest and also to the diaphragm. The two lower lobes were much increased in size and the tissue resembled that of liver. On pressing with the finger it did not indent, but tore, and a piece of the lower lobe sank in water. On section a dirty-red purulent fluid oozed. The upper lobe seemed to be normal; it floated in water and crepitated on pressure. The weight of the right lung was 2,041.4 grams. The left lung was normal; weight, 680 grams. Liver very much enlarged; weighed 2,800 grams. Kidney a little enlarged, otherwise normal; capsule peeled off easily.

#### CASE 14.

##### *Traumatic.*

H. J.; aged 46 years; nativity, Finland; admitted to the Marine Hospital, Stapleton, Staten Island, New York, January 10; died January 13, 1894.

*History.*—Patient stated at time of his admission that ten days previous he had fallen and injured his side; also that he had pain in chest and cough. Examination revealed consolidation of lower lobe of right lung, increased bronchial breathing, loss of vesicular murmur, breathing light and shallow.

*Necropsy (eighteen hours after death).*—Thorax opened; pericardium contained considerable fluid; heart larger than normal; valves competent. Fracture of seventh rib on right side. The posterior fragment had penetrated the lower lobe of lung, which was the seat of red hepatization and hypostatic congestion. Upper lobes cedematous and presenting signs of slight capillary bronchitis and catarrhal pneumonia. Liver normal. Other organs not examined.

#### LOBULAR PNEUMONIA.

#### CASE 1.

S. H. (colored); aged 35 years; nativity, Kentucky; admitted to the Marine Hospital, Memphis, Tenn., April 11; died April 18, 1894.

*History.*—Three days before admission to the hospital the patient was seized with a chill and fever. He had a cough and noticed some blood in his expectorations. At the time of admission he had fever, pain in the chest, and rapid and shallow breathing. Signs of bronchitis were present, but no consolidated area was found in the lungs. There was evidence of pleurisy and of pleuritic effusion on the left side. Cough and expectoration were slight. From this time the fever diminished, but the respiratory symptoms grew worse. Signs of lobular pneumonia developed quickly, and the areas of consolidation increased progressively until death.

*Necropsy (four hours after death).*—No post-mortem lividity. Rigor mortis present. General nourishment fair. Pupils moderately dilated. The heart weighed 230

grams. The pericardial sac was normal. All the valves were competent. The heart had stopped in systole. The left lung weighed 990 grams. There was some inflammation of its pleura, but only a slight adhesion at the back and no effusion in the pleural cavity. The upper lobe of this lung was more or less consolidated all through and sank in water. The lower lobe contained patches of consolidation in its upper part. The right lung weighed 634 grams. It was entirely adherent to the chest wall, except in a small area at the front of the lower lobe. There was no effusion in the pleural cavity. There was adhesion between the lobes of the lung. The upper lobe and a part of the lower were affected with lobular pneumonia, but in a less degree than the other lung. The middle lobe was nearly normal. The liver was normal in color and in general appearance; weighed 2,005 grams. The left kidney weighed 170 grams; the right, 189 grams. The spleen weighed 210 grams.

#### CASE 2.

##### *Bilateral.*

C. F. H.; aged 35 years; nativity, New York City; was admitted to the United States Marine Hospital, New Orleans, La., March 19; died March 29, 1894.

*History.*—The patient was taken ill six days before admission, on his vessel, while on the way from New York City, with a slight chill, dyspnea, and pain in left side. He received medical attention from a physician, one of the passengers. On arriving at this city the ambulance was summoned and he was brought to the hospital. On admission he complained of breathlessness and considerable pain in left lumbar region. He had but little cough, though had "spit blood" twice; no appetite; bowels constipated. Auscultation found the left lung silent except at apex. Temperature, 37.8° C. and rising; pulse, 100, thready; respiration, 24 and fairly free. These symptoms were aggravated on the following day to 39.5° C., 128, and 44, respectively. The bowels were unloaded with a gentle purge, followed by an enema; and an abundant supply of easily digested and nutritious food given. The patient improved satisfactorily under supporting and revulsive treatment for several days, but suddenly sank, became comatose, and died at 12.45 p. m.

*Necropsy (four hours after death).*—Body that of a young white man; slender, yet fairly well nourished. Post-mortem lividity slight. Rigor mortis absent. Heart: Weight, 422 grams; normal size; pale and loaded with fat; pericardial sac normal; tricuspid valve incompetent; other valves competent, but showing traces of fatty deposit. Ventricles somewhat hypertrophied and containing firm ante-mortem clots entangled with the columnæ carneæ. The left lung (weight, 730 grams), inferior lobe, and the entire right lung (weight, 1,230 grams) were in red hepatization and impervious to air. The apex of the left was thickly studded with small tubercles, which were found at intervals throughout both lungs. Both pleural cavities were almost obliterated by recent adhesions. Liver dark red and congested. Other organs not examined.

#### ABSCCESS OF LUNG.

F. S.; aged 23 years; nativity, Tennessee; admitted to the United States Marine Hospital, Cairo, Ill., February 24; died March 20, 1894.

*History.*—Patient states that for three days last December he was exposed to severe weather, and that during that time his feet and legs were wet and his trousers frozen. Previously enjoyed excellent health. He was taken with severe cough and pain in both sides, being worse in right. Gives no history of having raised blood at any time. He has recently lost several pounds in weight. Severe pain in right side, aggravated by cough and deep inspiration; expectoration white and scanty. There were signs of consolidation of lower lobe of right lung, with pleuritis on both sides. February 25 what was apparently an abscess ruptured in right lung. A large quantity of fetid pus was expectorated; cough very severe; prostration considerable;

respiration hurried; pain in right side much aggravated. Patient continued to raise large quantities of very offensive purulent matter. He steadily failed till death occurred.

*Necropsy (twenty-seven hours after death).*—Postmortem lividity marked. Cadaveric rigidity moderate. Body very much emaciated. Right lung was apparently destroyed, and the pleural cavity was half filled with pus. Left lung bound by a few apparently recent adhesions. Pericardial fluid considerably increased in quantity. Pericardium adherent in places. Heart was covered with a villous growth of fibrin, "cor villosum," and weighed 341 grams. Liver pale; weight, 7,183 grams. Spleen bound by a few adhesions. Pancreas apparently normal. Both kidneys were enlarged; capsules adherent. Right kidney weighed 217 grams; left, 201 grams.

### GANGRENE OF LUNG

#### CASE 1.

W. S. (colored); aged 26 years; nativity, Mississippi; admitted to the United States Marine Hospital, Memphis, Tenn., January 4; died January 7, 1894.

*History.*—The patient was brought to the hospital in the ambulance in a very weak condition, and was scarcely able to give an account of his sickness. It appeared that he had been sick nearly a month, and he believed that he had had both malarial fever and pneumonia. I judged that epidemic influenza had been first in the field. He had moderate, irregular fever, bloody expectoration, and a very foul breath. Bronchitis was present, and there were large areas of consolidation in the upper and lower parts of the right lung. His sclerotics and skin showed icterus. He was past aid when admitted to the hospital.

*Necropsy (eight hours after death).*—Post-mortem lividity about shoulders, arms, and back. Rigor mortis present. General nourishment poor. Pupils natural. The heart weighed 230 grams. The pericardial sac contained some serum, and the visceral pericardium showed much congestion, with fibrinous deposits along the lines of the larger vessels. At the apex of the heart were two small, thick appendages of the pericardium, which appeared to be congenital rather than the remains of inflammatory bands. The valves of the heart were all competent. The bronchial lymphatic glands were much enlarged, and one of the largest was found slightly cheesy in the center. The left lung weighed 372 grams. Its pleural cavity was normal. The lung was much congested throughout. The right lung weighed 1,810 grams. Firm adhesions existed in all parts of its pleural cavity, and it could not be separated at all from the diaphragm. The lung filled the cavity and had the marks of the ribs on its surface. It barely floated in water. When cut the tissue exuded offensive, bloody pus, and the entire lung appeared to be gangrenous. A large abscess was found in the lowest portion of the lung, against the diaphragm, filled, like the lung tissue, with offensive pus. The liver was normal in color. It weighed 1,999 grams. The gall bladder contained only a little bile. The left kidney weighed 239 grams; the right, 240 grams. The spleen weighed 584 grams, and although large, was normal in look and feel. The sclerotics and the entire surface of the body showed icterus, which was probably due to septicæmia caused by the putrefying lung.

#### CASE 2.

J. M.; aged 59 years; nativity, Ohio; admitted to the United States Marine Hospital, Evansville, Ind., March 19, 1894; diagnosis, malarial cachexia. Readmitted May 12, 1894; diagnosis, gangrene of lung; died May 21, 1894.

*History.*—Patient was slightly emaciated, complexion of saffron color. Had had slight cough for about fifteen days. Had had malarial fever at intervals for several years. Temperature normal on the morning of the 20th; in the evening temperature was 38.6° C. Throughout illness thermometer indicated normal in morning and 38° C. in evening. On physical examination percussion elicited dullness over apex of

right lung. Liver and spleen were enlarged. Auscultation gave mucous rales over anterior portions of both lungs. Heart's action rapid, and continued so with irregular exacerbations of palpitation. Expectoration was at first insignificant. About the 1st of May the sputum became offensive and brownish in color. The odor was characteristic of a gangrenous process in the lung, and carbolated gauze and disinfectants were constantly employed. Patient gradually sank, dying of exhaustion in the afternoon of May 21, 1894.

*Necropsy (four hours after death).*—Body much emaciated. Rigor mortis marked. Heart and pericardium normal. Left lung weighed 975 grams, and hypostatic congestion was present. The right lung weighed 1,200 grams; was adherent to chest wall and presented a large cavity at apex. The cavity was filled with a grumous, dark, offensive, and stinking fluid. Small cavities were seen in the lower lobe. Liver weighed 1,420 grams. Spleen was soft and weighed 180 grams. Kidneys normal.

#### GASTRITIS—STENOSIS OF ARCH OF AORTA.

S. H.; aged 49 years; nativity, West Indies; admitted to the Marine Hospital, Stapleton, Staten Island, New York, September 28; died October 3, 1893.

*History.*—Patient stated on admission that last Sunday, the 24th instant, he began to feel like vomiting, and did vomit next day, and had been sick at the stomach ever since; no appetite; had taken castor oil, and had about two passages a day; had had soreness across lower part of abdomen, also over epigastrium. Moderate drinker; no gonorrhœal or specific history. Sleeps poorly; no headache. Physical examination showed a well-nourished body, no apparent abnormality of viscera, of abdomen, or thorax. Complained of pain over upper part of abdomen. On the 29th his stomach was somewhat distended. Patient stated that he strained himself by sucking at a water pipe, and that he noticed the pain just afterwards. Nausea appeared about the same time. Ordered turpentine stupes over stomach. On the evening of the same day the pain was somewhat relieved. Ordered poultice every hour. The following day the pain was easier, but bowels constipated. Poultices continued and enema of hot water ordered. On October 1 patient was very weak; was ordered milk punch every hour. On the 3d the pain had ceased, but no movement had occurred for two days. Ordered hot water enema at once; patient very weak. At 11.30 a. m. patient grew rapidly worse and dropped in an unconscious condition, and died in a few minutes.

*Necropsy (four hours after death).*—Body well nourished. Post-mortem rigidity well marked. Post-mortem congestion of face and dependent portion of body. Thorax: Lungs collapsed, heart hypertrophied, valves competent, and a stenosis was seen just above the aortic valves, in the ascending portion of the arch of the aorta. There were several small ulcers in the beginning of the aorta, which were lined with atheromatous plates and had undergone fatty degeneration. Liver and kidneys fatty and congested. Spleen quite small. Stomach seat of extensive inflammation, and a muco-purulent exudate covered its under surface, which was reddened and inflamed, it being in some places impossible to efface the rugæ by traction on the walls of the viscus. Pancreas hard and enlarged.

#### CHRONIC DIARRHŒA—GASTRIC CATARRH.

I. R. W.; aged 41 years; nativity, Maryland; admitted to the United States Marine Hospital, Baltimore, Md., August 18; died August 24, 1893.

*History.*—Diarrhœa of six weeks' duration; vomiting; pain in back; evacuations frequent, thin, watery, and of a brownish color. Pulse weak, but not rapid. Tongue dry and coated, and the thirst was so great that patient called for water every few moments. He was addicted to excessive use of opium, and not long since stated that he was going to drink himself to death. His temperature was as high as 39.8 C. August 24, at 2.40 a. m., became almost pulseless and breathing slow and labored; extremities were very cold. He died at 3 o'clock a. m.

*Necropsy (twelve hours after death).*—Body fairly well nourished. Rigor mortis. Lungs were of a waxy color and crepitated upon pressure. Here and there were some pleuritic adhesions. Heart normal; the pericardium contained a small quantity of serum. Liver very much enlarged, extended into the left hypochondriac region; the anterior inferior surface had already undergone post-mortem changes, being of a greenish color. Gall bladder fully distended; spleen and pancreas normal. Stomach congested and of a very red color; the serous covering of it and of the duodenum was red and glistening. The mucus membrane contained red striæ made of small extravasations of blood. The mesenteric glands were much enlarged. The mucus membrane of lower part of intestines (Sigmoid flexure and rectum) was thickened and rough, apparently due to chronic inflammation.

#### CIRRHOSIS OF LIVER—VALVULAR DISEASE OF HEART—ASCITES.

E. W.; aged 45 years; nativity, Connecticut; admitted to the United States Marine Hospital, New Orleans, La., August 26; died October 18, 1893.

*History.*—Patient had suffered many months from an enormous distention of his abdomen with fluid and a progressive emaciation, which, with failing strength, brought him to the hospital. He had been a hard drinker for many years, his excess in this line being only limited by his funds. On examination at admission the temperature was subnormal; pulse wiry, 84; respiration embarrassed, 30 per minute. Owing to accumulation of fluid the liver could not be well defined, but the impression to the hand was that of hob nail. Urine, 1,000 c. c. in twenty-four hours and albuminous. The temperature rose and fell (36° to 39° C.) with rhythmical regularity daily. A supporting and stimulating treatment was instituted, and, on August 31, the dyspnoea preventing his lying down, his abdomen was tapped and 24,000 c. c. of a highly albuminous fluid withdrawn, with great relief to his sufferings. This was twice repeated, withdrawing respectively 24,000 c. c. and 28,000 c. c., with such marked relief as enabled him to spend many days walking about the city parks. He began to fail rapidly about October 15, passing into coma twelve hours before death.

*Necropsy (nine hours after death).*—Body that of a much emaciated elderly white man. Rigor mortis slight. Post-mortem lividity marked. Heart: Weight, 240 grams; fatty; pulmonary valve competent; the other three incompetent, the incompetency of the mitral evidently due to a number of small nodules upon it and preventing the approximation of valve leaflets. Wall of left ventricle thickened. Lungs hypostatically congested. Left, weight, 640 grams; pleural cavity showed a few old adhesions. Right, weight 610 grams; pleural cavity normal. Abdominal cavity filled with albuminous fluid. Peritoneum much thickened and nodular. Stomach thickened and slightly dilated. Large intestine studded with nodular masses. Liver contracted; hobnailed; capsule closely adherent; creaking under knife; very dense; almost black in color and weighing 920 grams. Gall bladder walls thickened; ducts thickened at expense of caliber and almost impervious. Gall bladder distended with fluid bile, and five calculi, weighing together 52 grams. Pancreas: Weight, 100 grams; nodular and of a light straw color; fatty degeneration evident. Kidneys: Very dark; congested; weight, left 145 grams, right 150 grams. Spleen: Weight, 400 grams; almost black in color and very dense on section.

#### ABSCESS OF LIVER.

T. H.; aged 40 years; nativity, Ireland; admitted to the United States Marine Hospital, San Francisco, Cal., April 20; died June 7, 1894, at 6.50 o'clock a. m.

*History.*—On admittance patient complained of prostration, sweating, vomiting, chills, and fever. He was constipated, and the tongue was covered with a brownish fur. His illness followed a prolonged alcoholic debauch. Patient had worked as a fireman on a Panama passenger steamer. Examination of blood specimen for plasmodium malarie was negative. The liver, especially the left lobe, seemed some-

what enlarged, but no signs of fluctuation could be elicited. There was a tendency to constipation, but the stools showed no absence of the bile secretion. Not until the 19th of May did he complain of pain between ensiform appendix of sternum and the umbilicus. One and one-half grams per diem of quinine were given, and for the first week there was a steady decline in the temperature. After the eighth day the quinine was stopped, and afterwards recommenced, and stopped again subsequently. On the morning of May 29, at 3 o'clock, patient suddenly developed agonizing pain in the epigastrium, which was relieved with morphia. It was followed by no special change in the temperature, no thready pulse, tympanitis, nor other indication of perforation. On May 31 there was a forcible pulsation of a non-expansile character midway between ensiform appendix and the umbilicus. Fecal matter passed that morning showed presence of half-digested blood, streaked with pus. On June 4 his skin showed a pronounced icterus. During the ensuing time he had several attacks of extreme pain, with vaso-motor relaxation and cold sweats. On the morning of the 7th, while straining at stool, he suddenly became unconscious and shortly after expired.

*Necropsy (five hours after death).*—No post-mortem rigidity. Skin stained with bile. Body emaciated. Thoracic viscera healthy. On opening the peritoneum a large clot of blood, flattened out and extending from the liver into the pelvis, was seen. The blood clot, which measured about 1½ liters, was partially organized in places, showing that there had been more than one hemorrhage. Situated on the under surface of the liver, involving a portion of the left lobe, the lobulus spigelii, caudatus, quadratus, and the hepatic substance toward the orifice of the gall bladder, was an abscess cavity with a capacity of about 250 c. c. The cavity contained only pus of a thick, shreddy appearance. The branch of the vena porta going to the left lobe of the liver was ulcerated through, and was the cause of the hemorrhage into the peritoneal cavity. The gall bladder was distended with blood and pus, the abscess having eaten into it and destroyed some small blood vessels and discharged a portion of the abscess contents into it. This would account for the blood and pus observed in the stools also the jaundice which appeared a few days prior to death. The right lobe of the liver was a little enlarged and exhibited advanced fatty degeneration. The other viscera appeared healthy.

#### LARDACEOUS LIVER.

F. W.; aged 27 years; nativity, Finland; admitted to marine ward, St. Joseph's Hospital, Savannah, Ga., December 26; died December 27, 1893.

*History.*—(This was gotten from the master of bark *Dillon*, as the patient was unconscious at the time he was brought into the hospital, and so remained until his death.) The patient was shipped in New York on August 1, 1893. Stated at that time that he had just been discharged from the hospital. Had the appearance of a man just recovering from a severe attack of malarial fever. Worked for twenty-four days without complaining; then was taken with diarrhœa. Could not retain food for any length of time. Resumed work after fifteen days, but was very pale, had lost a great deal in weight, and the least exertion caused shortness of breath. After working for a period of twenty days he remained in his bunk until the day of his arrival in the hospital. Condition on arrival: Bladder distended with pale urine; great emaciation; eyes sunken; alopecia very marked; quiet delirium; legs and forearms flexed; tongue coated and furrowed; no fever; abdomen distended and tympanitic. Physical examination was negative, with the exception of the marked enlargement of the liver, which was easily determined by percussion and palpation, and evidences of syphilitic infection.

*Necropsy (nineteen hours after death).*—Rigor mortis moderate. Body poorly nourished. Lower lobe of left lung congested and slightly œdematous. Lower lobe of right lung congested, and also slightly œdematous; presented several small cicatrices. Pericardial cavity contained about 10 c. c. of fluid; heart muscle and valves normal.

Weight of liver, 2,340 grams; uniformly enlarged; consistence doughy; color grayish and glistening; the deposits of the amyloid material were in patches, almost uniformly distributed over the whole organ. These spots resisted the knife almost like new cartilage, and presented an anæmic and whitish appearance. Sections of this deposit assumed a mahogany color when subjected to the "iodine-sulphuric acid" test, changing to the violet tint on addition of latter. Spleen slightly enlarged; weight, 224 grams. No amyloid deposit. Kidneys normal in weight and reaction. Stomach and intestines showed evidences of chronic congestion and catarrh

## PERITONITIS, ACUTE.

## CASE 1.

J. S.; aged 46 years; nativity, Norway; admitted to the United States Marine Hospital, Portland, Me., October 21; died October 22, 1893.

*History.*—Patient was taken sick three days previous to admission with severe pains in the abdomen. Pain was paroxysmal in character and very intense. There was some vomiting and obstinate constipation. Upon admission he was suffering excruciating agony. Face had an anxious expression and patient was slightly delirious. The abdomen was tender on pressure and tympanitis marked. All the symptoms increased in severity, and death closed the scene on the following day.

*Necropsy (seventeen hours after death).*—Rigor mortis marked, lividity slight, and body well nourished. Heart normal; weight, 285 grams. Lungs healthy, the right weighing 650 grams; left, 625 grams. The peritoneum was much redder than normal, the blood vessels being dilated, thicker, and covered with a layer of fibrin. The peritoneal cavity contained about 1,000 c. c. of sero-purulent fluid. The intestines were much distended and the serous coats of them highly inflamed. No evidence of any perforation could be found. Liver was normal, weighing 1,650 grams. Stomach normal. The other abdominal viscera were macroscopically normal. Brain not examined.

## CASE 2.

S. W. (colored); aged 22 years; nativity, Tennessee; admitted to the United States Marine Hospital, Memphis, Tenn., February 12; died February 13, 1894.

*History.*—The patient was near the fatal termination of his sickness when brought to the hospital and could give little account of himself. He had had pain in the abdomen for a week, but had not given up until the day before, when the pain became very severe. His symptoms were peculiar, as his abdomen was extremely retracted, suggesting lead colic, and a correct diagnosis of the disease was not made.

*Necropsy (twenty-four hours after death).*—No post-mortem lividity. Rigor mortis strongly marked. General nourishment good. Pupils dilated. The heart weighed 303 grams. The pericardial sac contained a little reddish serum and the visceral pericardium was distinctly injected, particularly at the apex of the heart. All the valves of the heart were competent. The left ventricle was somewhat hypertrophied. The left lung weighed 270 grams. Its pleural cavity was free from adhesions. The right lung weighed 300 grams. Its lobes adhered together and small adhesions existed in the pleural cavity at the back of the lung. The inflammation of the pleura was evidently recent. Both lungs were congested, but otherwise normal. The peritoneal cavity contained considerable serum holding fibrinous flakes in suspension, and the peritoneum was the seat of severe inflammation, which was most severe in the portion covering the ileum. There were fibrinous deposits on the intestines. The stomach was normal in appearance on both outer and inner surfaces. The upper portion of the small intestine was distended, as is usual in peritonitis. At about the beginning of the ileum there was a sudden constriction and the entire following portions of the small intestine and the whole of the large intestine were closely contracted. No volvulus, invagination, or other cause of obstruction was found. The vermiform appendix was very long and was confined by the mesentery for



only a short portion of its length. The free part was very large, in consequence of thickening of its wall. It bore less signs of inflammation of its peritoneal covering than some other parts of the intestine. The whole intestine was examined for some evidence of a perforation and none was found. Its mucous membrane was normal in appearance for several feet at the beginning of the constricted portion. The liver was normal in color and appearance. It weighed 1,650 grams. The left kidney weighed 160 grams; the right, 135 grams. Both were normal in gross appearance. The spleen was very small, weighing only 122 grams.

### CHRONIC BRIGHT'S DISEASE

#### CASE 1.

C. A. W.; aged 43 years; nativity, Maine; admitted to the United States Marine Hospital, Boston, Mass., October 20; died December 21, 1893.

*History.*—Patient stated when admitted that his feet and ankles had been swollen for two years; that he passed a good deal of urine, had lost considerable flesh, felt weak, and had some ascites. Urinary analysis showed that he passed between 2,000 and 2,500 c. c. of urine in the twenty-four hours, of pale color and low specific gravity, and which contained a small quantity of albumen. Examination revealed forcible cardiac action, distinct mitral and aortic murmurs, high arterial tension, and atheroma of arteries. Later, among the prominent symptoms were disordered vision, œdema of eyelids, dry skin, dyspepsia, constipation, shortness of breath on exertion, marked œdema of lower extremities, increased ascites, producing dyspnoea, vomiting, disgust for food, and hiccough. His abdomen was aspirated three times for relief of distressing symptoms, at intervals of about three weeks. Total amount of fluid removed, about 8 gallons (35.24 liters). Mind remained clear until forty-eight hours before death, when he became delirious and died in a state of coma.

*Necropsy (fifteen hours after death).*—Body of large size; strongly built white male; emaciated. No post-mortem discoloration. Rigor mortis marked. Four small cicatrices on abdomen near umbilicus. Pupils dilated. Pericardial sac contained normal quantity of fluid. Heart weighed after opening 490 grams. Left ventricle dilated; walls hypertrophied concentrically and softened. Left auricle dilated and several small ante-mortem clots found. Mitral valve incompetent, contracted, thickened, and adhesion of one segment to wall of ventricle, with contraction of chordæ tendineæ. Aortic valve atheromatous, thickened, and contracted. Heart in systole. The large arteries were atheromatous. Larynx and trachea congested. Left lung weighed 810 grams, was œdematous, and there was present hypostatic pneumonia of lower lobe. Pleural cavity normal. Right lung weighed 935 grams; was œdematous. Pleural cavity was obliterated by firm adhesions of lung to chest wall and to diaphragm below. Abdominal cavity contained about 5,000 c. c. of serous fluid. Pharynx and œsophagus normal. Stomach weighed after opening 200 grams. Venous stasis was present. Walls hypertrophied and chronic catarrhal inflammation of the mucous membrane. Large and small intestines normal. Liver was congested; weighed 1,720 grams. Gall bladder distended. Spleen inflamed and softened; weighed 190 grams. Kidneys were of the small red variety. The left weighed 90 grams, and the right 100 grams. The surface of both presented a granular appearance. Capsules adherent and thickened. On surface of right kidney were three small cysts, distended with a clear, transparent fluid. On section the tissue was tough and resistant. Cortical portion atrophied to about 1 line in thickness. Pyramids contracted and darker than cortex. The line of demarcation between the two portions irregularly shown. Pelves contracted. Ureters normal. Urinary bladder empty; structure normal. Deep lymph glands in cervical region enlarged and softened, some being entirely broken down. Those in lumbar region normal.

## CASE 2.

*Aortic and mitral insufficiency.*

A. B.; aged 48 years; nativity, England; admitted to the United States Marine Hospital, Wilmington, N. C., October 25; died October 30, 1893.

*History.*—He was transferred from Jacksonville, Fla. On admission to hospital was emaciated; complained of shortness of breath; urine contained a large amount of albumen.

*Necropsy.*—Post-mortem lividity moderate. Rigor mortis slight. General nourishment poor. Pupils dilated. Heart weighed 540 grams; hypertrophied, especially the left ventricle. The pericardial sac contained a quantity of sero-purulent fluid. The aortic valve incompetent and contained vegetations. The mitral valve incompetent, hard, thick and crumpled, and covered with vegetations. The papillary muscles and chordæ tendineæ were shortened and bound together by adhesions and vegetations. The lungs and pleural cavities were normal. The liver was normal; weighed 1,500 grams. The kidneys showed an advanced stage of chronic inflammation in the cortical portions. The capsules were firmly bound to the cortex in various places by cicatricial adhesions. The pyramids were congested and contained several small cysts filled with a fluid resembling pus.

## CASE 3.

M. E.; aged 46 years; nativity, United States; admitted to the United States Marine Hospital, San Francisco, Cal., May 3; died June 16, 1894, at 1.30 o'clock a. m.

*History.*—On admittance patient complained of spells of dyspnoea and dropsy of the lower extremity. He had a sallow, anæmic appearance. Treatment was carried on, but gave only temporary relief, and he declined slowly. On June 12 he became very restless, soon developing a violent mania. He became so intractable that confinement and restraint were necessary. On the 14th, as the mania subsided, he lapsed into unconsciousness, and remained so until the time of his death.

*Necropsy (nine hours after death).*—Rigor mortis well marked. Tissues dropsical; some post-mortem lividity about the neck and back. Slight traces of pericarditis, such as patches of inflammatory dots and small fibrinous exudate in the pericardial sac. Hypostatic congestion in posterior parts of both lungs. Liver and spleen normal. Engorgement of portal system of veins. The right kidney was diminished in size, nodular on the exterior, dark red in color, and resistant and tough on section; weight, 90 grams. Left kidney very greatly contracted; surface nodular and covered with small cysts, which were filled with a dark jelly-like material. The cortex almost obliterated by reason of cirrhotic tissue. Color dark reddish blue; weight 60 grams. Both kidneys contained much fat in the pelves.

## CASE 4.

E. L. (colored); aged 55 years; nativity, New York; transferred to United States Marine Hospital, Detroit, Mich., from hospital, Port Huron, Mich., January 30; died February 2, 1894.

*History.*—The patient stated that he had been sick in the Hospital, Port Huron, for six weeks. Previous to that he had been well except for a feeling of weakness and an irresistible desire to sleep at all times. At present he was suffering from shortness of breath, headache, and drowsiness. Urinated freely and had to pass his water three or four times during the night. Appetite good; bowels open. Had a chancre a year ago. Physical examination showed the body well nourished. Respiratory movements quickened. Vesicular murmur roughened, but no rales heard over either lung. Heart sounds normal, but strong impulse felt over left fifth intercostal space. Liver and spleen not enlarged. Abdomen not swollen. Slight

œdema in legs. Stricture in membranous portion of urethra. Urine small in quantity, high colored, smoky, reaction acid; specific gravity, 1.010; about 40 per cent albumen present. Temperature, 37° C.; pulse, 82. The patient had slight fever (38.4° C.) on the 31st instant, but otherwise his condition was unchanged until the morning of February 2. He was then suddenly attacked with dyspnoea and great restlessness, and soon became unconscious, with stertorous breathing, due to œdema of the lungs. Pulse still full and strong. He also had two convulsions within three hours. At 9 a. m. he rallied and was able to talk and take medicines. The dyspnoea and other symptoms, however, returned, and he died at 2 p. m. of the same day.

*Necropsy (sixteen hours after death).*—Body well nourished. Rigor mortis fairly well marked. Heart normal. Right lung bound down by old adhesions; both lungs filled with carbonaceous particles. Liver of deep red color. Spleen small. Right kidney of natural size; capsule nonadherent; cortical portion thin, of a pale yellow color; pyramidal portion of a light red; pelvis very fatty. Left kidney larger than normal; small venous cyst on outer surface; in other respects similar to right. Other organs not examined.

## CASE 5.

J. H.; aged 46 years; nativity, Germany; admitted to the United States Marine Hospital, San Francisco, Cal., May 16; died June 7, 1894, at 1.05 o'clock a. m.

*History.*—He was admitted in a cyanosed, semiconscious condition, suffering from uræmic poisoning. The urine contained a large quantity of albumen. Patient had been treated here on two previous occasions. On being admitted the first time, March 19, 1894, his illness was primary acute nephritis. He responded promptly to treatment; the albumen disappeared from his urine and his general condition was good. At the end of two weeks the patient left the hospital contrary to advice. A repetition of the excesses which brought on the first attack induced subacute nephritis. He was again received and treated at the hospital, and his condition was so far relieved at the end of three weeks that he left once more. After readmittance for the last time treatment produced no amelioration; general anasarca set in, dyspnoea and cyanosis increased, and, following on, vomiting, unconsciousness, Cheyne-Stokes's respiration, and death.

*Necropsy (nine hours after death).*—Post-mortem lividity and rigidity. Body fat and flabby; the extra vascular spaces, including the serous cavities, filled with fluid. A small part of lower lobe of right lung in a state of hypostatic congestion. The lungs were small, in great disproportion to weight of body. They were also slightly compressed from a small serous exudate in the pleural sacs. Heart was considerably hypertrophied, particularly the left ventricle. The ventricles and auricles were filled with post-mortem clots. The heart weighed 660 grams. The omentum contained large quantities of fat. Liver and spleen appeared about normal. Both kidneys were small; the capsules thickened and adherent in places. The surfaces of the organs were covered with small nodules. Numerous minute cysts existed on the surface. When stripped of the capsules they presented a dark red color. On section the substance of the kidneys was tough and leathery. The fat about the pelvis was greatly increased.

## CASE 6.

M. M. (colored); aged 28 years; nativity, Portugal; admitted to the United States Marine Hospital, Baltimore, Md., April 19, 1892; died January 19, 1894.

*History.*—Was transferred from Norfolk, where he had been treated for an aggravated case of syphilitic iritis, for which he had been under treatment since November of the previous year. On admission to this hospital the condition of the eye indicated iritis, and the treatment was continued. On the night of April 12, 1893,

the patient had a severe chill, having felt cold all night. In the morning was perspiring and complained of pain in back of his neck. April 14 he complained of severe pain in head. Œdema about the eyes appeared on the 17th, and increased during the 18th and 19th. He suffered much pain during this time, and deglutition was difficult. He remained in this condition until the 23d, when the œdema disappeared and deglutition became easy. April 23 he began to vomit after meals and complain of pain in the epigastric region. On the 2d of May his respiration became very irregular. Urine examined on May 12 revealed large quantities of albumen. October 16 he began to have cramps and twitching of muscles of face, hands, and feet. Suffered with these cramps almost every other night. During the last three days of his illness he bled considerably from nose and was in a semicomatose condition.

*Necropsy.*—Rigor mortis well marked. Body emaciated. Heart much enlarged and contained a large ante-mortem clot. Heart surrounded by 500 grams of fat. Lungs normal. Liver stained with bile; weight, 4,000 grams. Spleen enlarged; weight, 500 grams. Suprarenal capsules contracted and indurated. Left kidney very small, contracted; cortical portion nearly obliterated; small cysts near surface; capsule easily detached and having a rough surface; weight, 250 grams; right similar to left.

#### CASE 7.

C. A.; aged 54 years; nativity, Maine; admitted to United States Marine Hospital, Boston, Mass., October 2; died October 15, 1893.

*History.*—Was in the hospital a short time since for chronic Bright's disease, with œdema and dyspnœa. At time of last admission the œdema of connective tissue was general. Dyspnœa distressing. Passed very little urine. Heart hypertrophied and its valves incompetent. Pericardial sac and pleural cavity contained each effusions of bloody serum and both were aspirated; 400 c. c. taken from the former and 1,000 c. c. from the latter. Left ventricle was pierced by needle, as shown at autopsy four days later. But there were no direct symptoms at time and no perceptible effect on course of disease or its termination from this accident, which was unavoidable from the excessive size of heart. The area of dullness included the whole of left side of chest, the intercostal spaces being entirely obliterated and filled out. The needle of the aspirator entered directly in axillary line and between sixth and seventh ribs; no heart impulse obtainable at that point. No bad result, as stated before, occurred. The patient, on the contrary, experienced relief, and on next day asked to have the operation repeated.

*Necropsy (twelve hours after death).*—Body large; strongly built, muscular white male. Post-mortem discoloration decided on face, neck, and back. Rigor mortis moderate. Small papilloma on umbilicus. Subcutaneous tissues infiltrated with serum. Pericardium nearly empty. Capacity about 300 c. c. Heart enormously hypertrophied; weight, 885 grams. Three fingers could be readily pressed through mitral opening. Tricuspid and aortic semilunar valves also incompetent. At apex of left ventricle there were several punctures plainly discernible, one of which entered cavity. Larynx and trachea normal. Lungs congested posteriorly; collapsed inferiorly from pressure. Pleural cavity contained 1,500 c. c. bloody fluid. Peritoneum congested. Stomach inflamed; a chronic catarrhal condition; vessels enlarged and tortuous. Intestines distended with gas. Liver: Hypertrophic cirrhosis; Glisson's capsule contracted in places; weight, 2,120 grams. Kidneys granular and contracted; cortical and medullary line almost obliterated. Surface of right kidney contained several small cysts; weight, 225 grams; this is somewhat over the normal, but subject was much over normal in size. Left kidney weighed 175 grams. Spleen small; weight, 145 grams.

## CASE 8.

*Valvular disease of heart.*

H. S.; aged 45 years; nativity, Newfoundland; admitted to United States Marine Hospital, Boston, Mass., June 25, 1894, suffering from stenosis of mitral valve and chronic parenchymatous nephritis, with general dropsy and œdema; died July 1, 1894.

*Necropsy (fourteen hours after death).*—Body medium size, strongly built. Post-mortem lividity on dependent parts. Rigor mortis. Teeth clenched on lower lip as if in pain. Eyelids closed; pupils dilated. Throat, pharynx, and trachea covered with thick, sticky mucus. Glottis œdematous. Both lungs œdematous and congested in parts. Weight of lungs: Left, 600 grams; right, 720 grams. Pericardium contained 500 c. c. fluid. Heart hypertrophied and dilated. Aortic and pulmonary valves normal. Mitral valve only represented by a bony or calcareous ring, in diameter about 1 cm. Tricuspid valve utterly incompetent. Weight of heart, 540 grams. Pleural cavity filled with fluid, about 1,000 c. c. Catarrhal inflammation of stomach, which was covered with mucus. Nutmeg or gin drinker's liver. Color brown. Weight, 1,290 grams. Gall bladder almost obliterated, and duct contained biliary calculus about the size of a large bean. Pancreas weighed 120 grams. Large white kidney; weight, 190 grams. Death from œdema of lungs and glottis, superinduced by tricuspid regurgitation and mitral stenosis.

## CASE 9.

*Cerebral hemorrhage.*

C. L. (colored); aged 40 years; nativity, Maryland; admitted to the United States Marine Hospital, Baltimore, Md., February 16; died February 17, 1894.

*History.*—His illness began with "spasms" the day previous to his admittance to the hospital. During the day of entrance he had eight convulsions in rapid succession, and lost consciousness, which he never regained, dying the following day. He had an attack of facial paralysis eight years ago. On February 16, at 9 p. m., his pulse was 102 per minute and very weak; breathing labored and at times whistling in character; pupils minutely contracted, the left more than the right. Temperature 35.6° C. in axilla. Bladder contained about 75 c. c. of urine, which contained about 40 per cent of albumen. Had spells of dyspnea about every ten minutes, each spell lasting about two minutes, the sterno-cleido-mastoid being rigidly contracted; also the muscles of the arm, especially the pronators. Patient died at 11 a. m. February 17, 1894.

*Necropsy (six hours after death).*—Rigor mortis marked. Arteries in an atheromatous condition. Brain tissue very soft and flabby. Entire brain was much congested. Right lateral ventricle filled with clotted blood (cerebral hemorrhage). There were old pleuritic adhesions on both sides of chest cavity. Left ventricle of heart much hypertrophied. Coronary arteries were atheromatous. The aortic valves contained plates of calcareous matter. Kidneys were lobulated and cortical portion contracted (chronic interstitial nephritis).

## ORGANIC STRICTURE OF THE URETHRA.

## CASE 1.

*Septicæmia.*

W. H. W.; aged 54 years; nativity, New York; admitted to marine ward, St. Francis Xavier's Infirmary, Charleston, S. C., March 22; died April 24, 1894.

*History.*—Patient was originally admitted for what was regarded as a strain of the muscles of the back. There was constant pain in the back, with slight tenderness

of the muscles in lumbar region, aggravated by motion. The pain persisted and patient began to complain of frequency of micturition. The urethra was examined and three strictures of small caliber were found, two in the pendulous and one in the deep urethra. On April 15 patient was chloroformed and the two anterior strictures divided with Otis's urethrotome, and the deep stricture incised through the perineum. Antiseptic precautions were observed, the urethra irrigated before and after operation, and benzoic acid administered internally. The temperature rose in the evening after the operation, and fever, with brief remissions, steadily increased until patient's death nine days later.

*Necropsy.*—There was no attempt at repair in the perineal wound and its surface appeared necrotic. There was no inflammatory infiltration of the perineal tissues. Examination of the bladder showed that its walls were thickened and the mucous coat ulcerated. The kidneys, which were of normal size, were intensely congested and contained a large number of small hemorrhagic infarcts. The other organs were normal.

#### CASE 2.

##### *Cystitis, chronic—Pyelonephritis.*

F. P.; aged 33 years; nativity, Maine; admitted to the United States Marine Hospital, Portland, Me., by transfer from Bath, Me., March 17; died May 5, 1894.

*History.*—This seaman had been a patient at this hospital six years previous (March 21 to May 14, 1888) for the same disease, and was then treated by the writer. The treatment pursued was dilatation by metallic sounds, and he reported that in the period which had elapsed he had suffered no inconvenience in urination. About three months prior to admission he first noticed slight pains when passing water, and this was followed by an inability to retain it for any length of time, and was later troubled with involuntary urination at night. The urine became gradually foul in odor, dirty in appearance, and when he could not take care of himself longer he applied for relief at Bath, Me. Thence he was transferred to this hospital. Upon admission it was found that he was urinating every half hour and passing a dribbling stream of thick, foul urine, accompanied with a great deal of pain. He was given a bath, put to bed, and given a prescription containing belladonna, buchu, and uva ursi. In a few days this treatment, aided occasionally with anodynes to secure rest, resulted in relief of the acute symptoms, and a system of gradual urethral dilatation was begun. It was necessary to commence with a No. 1, as the entire urethra seemed to be one continuous row of strictures. This plan was pursued as rapidly as consistent with the patient's condition and strength, as he was almost a physical weakling by birth and by reason of his disease, until a No. 9 was retained after entrance into the bladder. The condition of the urethra may be judged from the fact that after the sound was withdrawn it remained open for many minutes on account of its lack of resiliency. Upon completion of the dilatation to this point the patient took to his bed (April 30) and never arose from it. He complained of general weakness and loss of appetite. He had no further trouble with frequent or painful micturition. A sore throat developed, for which a local application sufficed. He had a severe abdominal pain during night of May 3, and this recurred the next night. He developed no symptoms of any organic disease, although growing weaker daily. His water became more pronouncedly offensive and showed sediment of pus and mucus. On the morning of May 5 he arose to sit on the stool, assisted by the night watchman, and after completing it was lifted back on the bed and immediately expired.

*Necropsy.*—The abdomen only was opened, and all the organs in the cavity appeared normal. The chief interest was located in the bladder, ureters, and kidneys. The bladder was contracted and thickened as to its internal coat. The ureters were evenly dilated, approximately 13 mm. in diameter, and filled with a thin, purulent fluid. The kidneys were almost completely broken down, with foci of suppuration and disintegration everywhere throughout the uriniferous tubular

structure. Each measured about 10 cm. by 16 cm. The cortical structure was not more than 13 mm. thick in any part, and the pelvis, with the dilated and enlarged cavity thus formed, contained about 240 c. c. of a thin, purulent fluid.

This was a case of chronic pyelonephritis, which was the ultimate result of an attack of gonorrhœa and stricture acquired seven years prior to death. The stricture had produced a cystitis from back pressure, and this becoming chronic had invaded the ureters from the same mechanical process. In the same line the kidneys later felt the damming up of the urine and became diseased in turn. The process of breaking down was so gradual that no acute renal symptoms were ever noticed by the patient or made evident during the progress of his final illness.

### CASE 3.

#### *Pyonephrosis.*

L. G.; aged 52 years; admitted to the marine ward, St. Vincent's Hospital, Portland, Oreg., April 25; died May 1, 1894.

*History.*—Nine years ago, after repeated attacks of gonorrhœa, he experienced the first symptoms of urethral stricture, and since then the stricture has been frequently operated upon for the relief of urinary retention. For the past three months he had suffered from incontinence, the urine dribbling and passing in drops, and at various times there was complete obstruction of the flow of urine. His appearance indicated a life of dissipation, and on questioning gave a syphilitic and alcoholic history, and that he had been drinking excessively the past week; and within the past four days had suffered from chills, fever, and malaise. His tongue was thickly furred; he had no appetite and his bowels were loose; stools thin and watery. He had a mild cough, with slight mucous expectoration; and auscultation of chest revealed harshness and a few moist rales. He also had some pain in his back, over region of kidneys. Patient was ordered a hot bath and then put to bed. The stricture was found to be deeply seated in the membranous portion of the urethra. Examination revealed several enlarged lacunæ, which being filled with filiform bougies, one bougie was finally passed into the bladder. This was followed by Thompson's dilator, and also by steel sounds (English scale) up to No. 10. A catheter was then introduced into the bladder and urine withdrawn, which was decidedly ammoniacal and contained traces of albumen and pus. The stricture was then further dilated until it readily admitted a No. 15. No anæsthetic was used, and patient complained of but little pain. A slight hemorrhage followed the sound, apparently from deep urethra. Patient rested comfortably until 2 p. m. (four hours after operation), when he had a decided chill, with severe muscular pains, lasting about one hour. His temperature chart showed the following: When admitted his temperature was 38° C., but at 2 p. m. next day it suddenly rose to 39.2° C., following severe chill (four and one-half hours after operation). Next morning it was 38.4° C.; evening same day 38.1° C. No change on fourth day; but on fifth day it rose to 40.2° C., and remained about the same until the evening of sixth day, when it fell to 39° C. On morning of seventh and last day it was about normal, and remained so up to the time of his death, at 3 p. m. At first his pulse was strong and full, but later it became weak and rapid, at times almost imperceptible at the wrist. Respirations were frequent and superficial. There was a low, muttering delirium two hours before death. Quinine, digitalis, and whisky were administered, but with little apparent effect.

*Necropsy (twenty hours after death).*—Height, 5 feet 9 inches; circumference at shoulders, 38 inches. Post-mortem lividity moderate. Rigor mortis marked. General nourishment fair. Pupils normal. Lungs showed hypostatic congestion; otherwise normal. Slight pleural adhesions to right side. Heart normal in size; somewhat flabby, and contained a small ante-mortem clot. Normal fluid in pericardial sac. Liver slightly enlarged; abnormally full of blood; tissue soft and friable; nutmeg appearance on section and mottled externally. Spleen enlarged and

softened. Kidneys were somewhat congested and contained numerous foci of pus. The pelvis of right kidney contained pus and urine. The bladder wall was soft and thickened, the internal surface having a ribbed appearance, the so-called "columnar bladder." The penis and scrotum were slightly oedematous. The urethra showed in membranous portion the divided tissues of the stricture, and at this point there was slight extravasation of urine. Prostate gland normal. Opinion as to cause of death: Cysto-pyelitis and pyelo-nephritis, resulting from an old urethral stricture, with general pyæmic infection.

## CASE 4.

*Urethral calculi—Pyonephrosis—Chronic pachymeningitis.*

J. C. T.; aged 43 years; nativity, Massachusetts; admitted to marine ward, St. Francis Xavier Infirmary, Charleston, S. C., February 2; died March 8, 1894.

*History.*—When admitted was suffering from partial retention of urine and distressing pain during micturition. The urine contained much pus. He stated that he had had difficulty in emptying his bladder for seventeen years. A stricture of small caliber was found 10 cm. from the meatus, and immediately behind it a small calculus. The scar of a former chancre was found on the glans. Operation February 4. The stricture was divided, under chloroform, by internal urethrotomy, and the calculus, about 1 cm. in diameter, extracted by pressing it upward through the urethra. A second stricture in the membranous urethra was then discovered, and another calculus, behind it. This stricture was divided and the calculus removed through a perineal incision. This stone was much larger than the first and nearly filled the prostatic urethra. The bladder was explored by finger and sound through the perineal wound, but no more calculi were found. A catheter was tied in. Subsequent treatment consisted of antiseptic irrigation of bladder daily, the internal administration of salol, and supporting measures. The operation immediately relieved all distressing symptoms, but patient failed to improve. He continued to pass large quantities of pus in the urine. His behavior when admitted, had been queer, and this was attributed to mild uræmia. He now gradually became delirious, and shortly before death could be restrained with difficulty.

*Necropsy.*—Body fairly nourished. Cellular tissue slightly oedematous. Thoracic organs normal, except a few pericardial adhesions which had evidently existed for a long time. The bladder was chronically inflamed, sacculated, and its muscular walls greatly thickened. Both ureters were dilated to three times their normal size. The kidneys were affected in the same way. The pelvis of each was dilated to the size of a lemon and contained a quantity of thick pus. A number of small abscesses were scattered through the kidney tissue. The latter was undergoing fibroid change. Brain: The dura, along the longitudinal fissure and over portions of the frontal lobes, was thickened and injected; behind the upper limit of the Rolandic fissure on the left side the dura and pia were adherent to the brain; similar adhesions were found at various points on the frontal lobes. The brain was otherwise normal.

## URINARY FISTULA.

*Tubercular pyonephrosis.*

J. B.; aged 57 years; nativity, Ireland; admitted to the United States Marine Hospital, Chicago, Ill., December 7; died December 12, 1893.

*History.*—Was operated on at this hospital in 1874 for stricture of urethra. He had also at intervals been operated on for perineal abscess and fistulæ, which had formed at the seat of stricture. December 10, 1893, he was suffering from retention. The stricture was divulsed with Thompson's expander and a No. 29 bougie passed. The instruments were properly sterilized before using. The operation was followed



by a chill and rise of temperature the same evening. Patient grew steadily worse, vomiting frequently, growing weaker, and died with urinary suppression December 12.

*Necropsy (thirteen hours after death).*—Post-mortem lividity and rigor mortis marked. Pupils dilated. The heart appeared extremely fatty and weighed 470 grams. The pericardial sac contained a small quantity of fluid. The right lung weighed 780 grams; the left lung, 870 grams. The pleural cavity contained adhesions and was lessened on account of abdominal ascites. The abdomen contained a large quantity of ascitic fluid; amount not measured. The small and large intestines were distended with gas. The liver was congested and weighed 2,140 grams. Gall bladder and ducts distended with bile. The kidneys were both congested. The left contained large tubercular cavities and a quantity of pus. The right kidney presented a rough, uneven surface of tubercular nodules. The right kidney weighed 170 grams; left, 220 grams. The bladder contained a small quantity of urine and showed evidences of cystitis. The spleen was congested and weighed 160 grams. Other organs not examined.

#### MULTIPLE INJURY.

*Compound fracture of skull—Fracture of humerus and scald of the chest, upper and lower extremities.*

D. G.; aged 32 years; nativity, Pennsylvania; admitted to the United States Marine Hospital, New Orleans, La., January 1; died January 3, 1894.

*History.*—On January 1 the patient, a fireman, was severely injured by the explosion of the "nigger" boiler aboard his boat. The entire front of his chest, thighs, upper extremities, neck, and face were severely scalded (second degree), and at the same time he sustained a simple fracture of the right humerus and two compound fractures of the skull, one just behind the left ear and the other through the right temple, about 4 cm. above and behind the external canthus of the right eye. He was rendered unconscious by the shock, but only remained so for a few minutes, and was able with the assistance of two men to walk to his bunk on the upper deck. He was brought at once to the hospital, but died from shock thirty-eight hours after the receipt of the injuries.

*Necropsy (seven hours after death).*—Rigor mortis marked. Body that of a magnificently developed and well-nourished mulatto. The epidermis was entirely removed from the front of his chest, thighs, upper extremities, neck, and face. A simple fracture was found through the surgical neck of the right humerus and two compound fractures of the skull (with no sign of compression) were found, as indicated above. The abdominal cavity contained about 200 c. c. of dark uncoagulated blood, while on the greater curvature of the stomach and about the center of the transverse mesocolon two large ecchymotic spots, evidently due to a violent blow, though no sign of one could be found on the surface, showed the probable seat of the hemorrhage. Abdominal and thoracic organs normal.

#### FRACTURE OF SKULL.

H. B.; aged 47 years; nativity, Germany; admitted to the United States Marine Hospital, Port Townsend, Wash., March 25; died March 26, 1894.

*History.*—About 2 o'clock of the afternoon that he was admitted, while in a drunken brawl, he received one or several blows with the tiller handle on the left side of the head, knocking him down and causing insensibility, from which he never rallied. He was kept on the boat until after 9 o'clock in the evening, and during this time was given a considerable amount of whisky. He was brought to the hospital in the evening by a policeman, and when admitted was in a comatose condition; breathing stertorous; pulse, 40; pupils not widely dilated; could not be aroused; every muscle perfectly limp; bladder enormously distended. The nose was

badly contused and the cartilages torn loose from the nasal bones; both eyes were blackened; slight contusion over left eyebrow; laceration on left cheek; scratch on forehead; swelling over left temporal region. There was no paralysis. The bladder was emptied and the patient made comfortable. He died at 2 o'clock in the morning.

*Necropsy (twelve hours after death).*—Body of a well-nourished white man, 5 feet 2 inches high. Rigor mortis well marked. The lungs and heart were normal. The abdominal cavity was opened and the organs found to be normal. The cranium was opened in the usual manner. The scalp on the top of the head and in the temporal region was badly contused, and there was considerable clotted blood in the connective tissue. On removing the calvarium a large clot of blood, about 5 inches in length, 4 inches wide, and 1 inch thick, occupied the region immediately over and around the parietal lobe, but lying on the outside of the dura. The membranes of the brain were not ruptured. On removing the meninges a clot about the size of a 50-cent piece was found on the anterior surface of the frontal lobe. Left hemisphere congested. The skull was fractured in the following manner: The coronal suture was separated on the left side, and the fracture continued through the squamous portion of the temporal bone to the base of the skull; the separation continued across the sagittal for an inch, into the right coronal suture; another fracture extended from the coronal, near the sagittal on the left side, backward for 2 inches, connecting with an oblique fracture which commenced in the coronal suture about an inch to the right of the sagittal; the middle meningeal artery was ruptured on the left side.

#### MULTIPLE FRACTURE OF SKULL.

J. M.; aged 22 years; admitted to the United States Marine Hospital, Boston, Mass., November 4; died November 5, 1893.

*History.*—When admitted patient could walk and talk; asked for a glass of water and complained of headache; wandered somewhat in speech. Captain of vessel stated that the man was struck on the head by a boom and knocked down; became unconscious and remained so for about one hour. This occurred forty-eight hours previous to admission. At time of admission pupils were normal. There was very slight external evidence of injury. After being placed in bed an ice cap was applied to head and several drops of croton oil placed on back of tongue. He very soon became delirious and unconscious. At this time the left pupil was somewhat dilated, right normal. Left arm and leg became paralyzed; pulse slow and full; respiration stertorous and of the Cheyne-Stokes type. Blood was taken from the temporal artery; urine drawn by catheter. These measures seemed to afford him some relief. Died eight hours after admission.

*Necropsy.*—Body that of strongly built, muscular male. Froth oozing from mouth and nostrils. Post-mortem discoloration on face, neck, and chest. Infraorbital subconjunctival ecchymosis on left side. Head had normal appearance. Upon turning back scalp, an effusion of blood was found over entire vertex of skull. Upon opening the skull both middle meningeal arteries were found to be ruptured, causing considerable hemorrhage under temporal and parietal bones on both sides. Brain substance was extensively lacerated over ascending frontal and parietal lobes, right side. Brain substance softened over space of 6 cm., extending above and below fissure of Sylvius and into the fissure of Rolando on right side. On the left side, at about the same region, two small lacerations were located. The skull was fractured in eight places, or rather the fractures extended through seven bones. Beginning at the left supraorbital notch, a fracture extended diagonally across frontal bone to coronal suture, which it followed to greater wing of the sphenoid, at which point the line of fracture divided into two, one arm making an acute angle and crossing right temporal bone, producing some comminution; the other arm continued through the greater wing of the sphenoid, crossing the lesser wing, and through the ethmoid

back to the point of origin of fracture in frontal bone. The coronal suture was followed by a line of fracture throughout its entire extent. Passing down the left side of skull, it pursued a course similar to that on opposite side. The squamous portion of the temporal bone was fractured, but the skull in this vicinity did not suffer the comminution which the opposite side sustained. The line of fracture, similar to that of opposite side, entered greater wing of sphenoid, and at a more acute angle crossed the lesser wing and traversed the orbital plate of the frontal to the original point of fracture in the orbit. Thus the frontal, in two places, two parietals, and two temporal bones of the vault were fractured. Fracture passing to right included the ethmoid and both wings of sphenoid; the one to the left both wings of sphenoid at base.

#### FISSURED FRACTURE VAULT OF SKULL—RUPTURE OF RIGHT LATERAL SINUS.

J. C.; aged 22 years; nativity, Virginia; admitted to the United States Marine Hospital, Cairo, Ill., January 22; died January 22, 1894.

*History.*—He was admitted to hospital at 7.05 a. m. in an unconscious condition. He was said to have been struck on back of head with a spade. There was profuse hemorrhage from mouth and nose. There was a large crescentic cut over left eye, said to have been made by falling on a piece of iron. The hair was saturated with blood. There was no external evidence of depression of skull. Respirations ten per minute and stertorous. Heart rapid and feeble. A few moist rales on left side of chest; otherwise thoracic viscera were normal. No indication of disease of abdominal organs. A hypodermic injection of camphor and ether stimulated respiration and heart for a short time, but gradually respiration failed and stopped some minutes before the heart ceased to beat. Death occurred at 8.20 a. m.

*Necropsy (six hours after death).*—Body excellently well nourished. Rigor mortis marked. In removing the calvarium a large quantity of blood escaped. The dura mater was adherent along both sides of the longitudinal fissure, and at points of adherence seemed to have undergone cicatricial contraction. The inferior longitudinal sinus was obliterated, and in its course were found two calcarous masses the size of large beans. The right side of the brain was covered with dark grumous blood, and there were several large clots. A much smaller quantity was on left side. A fracture, beginning about 3 cm. from the posterior superior angle of left parietal bone, extended across the occipital bone 2 cm. below the superior angle to the right lambdoid suture. This suture was separated down to the point of junction of the right parietal and temporal bones with the occipital. From this point the fracture extended across the petrous portion of temporal bone into the squamous portion, stopping just before it reached the greater wing of the sphenoid. The copious hemorrhage would be accounted for by rupture of the lateral sinus. The interior of the brain was apparently normal. No other organs were examined.

#### FRACTURE OF THIRD AND FOURTH CERVICAL VERTEBRÆ.

P. K.; aged 37 years; nativity, United States; admitted to the United States Marine Hospital, Chicago, Ill., July 5; died July 6, 1893.

*History.*—On night of July 4, 1893, fell through a hatchway, striking on head and shoulders; was brought to hospital by police patrol in an unconscious condition, in which state he remained until he died, the next day, at 3 o'clock a. m.

*Necropsy (eight hours after death).*—Rigor mortis well marked. Body well nourished. Pupils dilated. Had an abrasion on right knee, probably forty-eight hours old. Slight contusion over crest of ileum, on right side, just above anterior superior spinous process. Head and neck much congested. Marked suffusion posteriorly, extending all along the body. Heart normal; weight, 320 grams. Lungs deeply congested; left weighed 670 grams; old pleuritic adhesions posteriorly; right weighed

730 grams. Liver: Increased connective tissue; color light; weight, 1,970 grams. Kidneys: Increased connective tissue and congested; weight, right 160 grams, left 180 grams. Spleen soft and congested; color dark; weight, 210 grams. Scalp appeared to be normal, but on cutting through it considerable fluid blood escaped. Skull normal. Membranes normal. Brain congested, but otherwise normal in appearance; weight, 1,270 grams. The third and fourth cervical vertebræ were found to be fractured, the fracture extending through the laminae of both vertebræ. The spinous process of the fourth was also fractured.

## CANCER OF STOMACH.

## CASE 1.

T. P.; aged 45 years; nativity, Sweden; admitted to the United States Marine Hospital, San Francisco, Cal., August 20; died August 29, 1893, at 1.25 o'clock a. m.

*History.*—On admittance patient complained of a severe, continuous pain in epigastrium and expectoration of blood. Pain is relieved by pressure. Said that when he partook of food the pain was rendered intense. Had acid eructations very often. Had been ill ten months. Stomach inspection negative. Palpation: Pain on pressure just below and to the left of the ensiform appendix. No tumor could be felt. Percussion negative. Lungs normal. Heart sounds weak, but no murmur. Liver area seemed slightly diminished in vertical line. Patient was very anæmic. On August 26 had an attack of hæmatemesis and vomited about 250 c. c. of bright arterial blood. On August 27 he had two attacks of hæmatemesis, and lost about 500 c. c. of blood in all. On evening of August 29 patient was attacked by severe gastric pain, which continued up to the time of his death.

*Necropsy.*—Body very anæmic. Rigor mortis well marked. No discoloration of body. Lungs healthy. Heart: Valves competent; cavities empty. Stomach very slightly dilated; perforation of posterior wall, about 2 cm. in diameter, just below and to the right of œsophageal orifice. Cavity of stomach filled with coagulated blood. Glandular carcinoma, in state of advanced ulceration, occupied superior curvature and upper portions of anterior and posterior walls, midway between pyloric and œsophageal orifice. Posterior wall was chiefly affected; edges of ulcer were indurated and everted; base was hard and irregular. Considerable blood found in intestine. Liver weighed 1,450 grams; appeared healthy. Viscera were almost exsanguinated.

## CASE 2.

C. E.; aged 57 years; nativity, Maryland; admitted to the United States Marine Hospital, Memphis, Tenn., February 7; died February 22, 1894.

*History.*—On admission to the hospital the patient gave a history of having been taken sick some two months before with disturbance of the stomach and inability to retain solids or liquids. He had been drinking heavily, and the disturbance of the stomach came on somewhat suddenly. He had evidently lost much flesh. He did not complain of pain in the stomach, and there was no tenderness to be found. The vomited matter appeared to consist of what had been swallowed, together with some mucus. The bowels were constipated. Toward the last feeding by rectum was tried, but without effect in staying the progressive failure of strength. The pulse was very weak and thready in the last days, but no affection of the heart was suspected.

*Necropsy (seven and one-quarter hours after death).*—Slight post-mortem lividity on the back and the extremities. Rigor mortis absent. The general nourishment seemed fair, but the extremely lax and sunken condition of the abdominal walls and the wide spread of the lower part of the chest showed that the man had been very pursy and had lost greatly in flesh. The subcutaneous tissue and the great omentum still contained considerable fat. Of the pupils, the left was natural and the right a little

dilated. The heart weighed 369 grams. The pericardial sac contained some dark, purulent liquid. The pericardium was much injected, particularly about the base of the heart. On the left ventricle, in a space extending from the apex upward and behind, was a thickening of the tissues, or a growth resembling granulation tissue. There were no adhesions in the sac. The valves of the heart were all competent. The aortic, pulmonary, and tricuspid valves were thickened, and some small vegetations were found on the aortic and the tricuspid. The wall of the left ventricle was hypertrophied; that of the right was thin and flabby. The lungs were much congested; the right one more so than the left. The left lung weighed 314 grams; the right, 487 grams. The pleura were free from inflammation and adhesions. About the cardiac orifice of the stomach and firmly attached to the diaphragm was a hard, inelastic ring of tissue, evidently cancerous. Several lymphatic glands situated near it were indurated and as big as chestnuts. The cardiac orifice of the stomach was constricted so that the tip of the forefinger could barely be forced into it, and the finger could not be forced through it. No ulceration of the scirrhous mass was found, and the mucous membrane of the stomach was not unhealthy. The stomach was shrunken and almost entirely empty. The large intestine, from one end to the other, contained numbers of small lumps of hardened feces. The liver was small, firm, and mottled in color, and the acini were not as distinguishable as usual on its cut surface. Its weight was 1,490 grams. The gall bladder was full of bile. The left kidney weighed 146 grams; the right, 141 grams. Both were normal in gross appearance. The spleen weighed 177 grams, and its tissue was unusually firm.

This case was a very interesting one. The affection of the pericardium and heart was undoubtedly cancerous, caused not by incorporation of the tissues, but by infection from contiguity; and it must have been the direct cause of death, since the presence of fat in the body showed that death could not have resulted from starvation, and the growth in the stomach was not far advanced.

#### CANCER OF STOMACH AND PANCREAS—ANEURISM OF THORACIC AORTA.

J. W.; aged 60 years; nativity, United States; admitted to the United States Marine Hospital, San Francisco, Cal., July 15; died September 14, 1893, at 7.45 p. m.

*History.*—On admission he complained of dropsy, which condition had been present for two weeks, frequent urination, pain in back, dyspnea, and severe attacks of dyspepsia. Said he had been unwell for about one year. He vomited frequently, the vomited matter consisting of undigested food, mucus, and small amount of blood. He sometimes had very acute attacks of pain in epigastrium. Ankles, legs, and lower eyelids were oedematous. Heart's action regular. Some hypertrophy. Aortic diastolic murmur. Pain on pressure over epigastrium. Urine loaded with albumen. For a while the patient became better, the oedema and dyspnea being relieved and the vomiting allayed. Emaciation was progressive, and about two weeks previous to death he suffered from severe vomiting, dyspnea, dysphagia, and obstinate constipation. The conditions named were intractable to treatment, and he died September 14, 1893, at 7.45 p. m.

*Necropsy (eighteen hours after death).*—Rigor mortis marked. Subject emaciated and lower extremities oedematous. Costal cartilages were ossified. Hydrothorax present. About 750 c. c. fluid in left pleural cavity, and 1,000 c. c. in right pleural cavity. A few adhesions were encountered in the left lung. Lower lobe presented appearances of a lobar pneumonia in stage of gray hepatization. A few pleuritic adhesions in the right lung. Lower lobe was also pneumonic, but much worse than lower lobe of left lung. Considerable pus was present. Heart: Fluid in pericardial sac, about 100 c. c. in quantity; some hypertrophy of left ventricle; aortic valve incompetent; mitral valve competent; endarteritis and calcification in arch of aorta. A fusiform aneurism, beginning at sinus magnus on ascending portion of arch of aorta and extending to diaphragm, was found. Posterior wall of aneurism was wanting. The fifth, sixth, seventh, and eighth dorsal vertebrae were eroded, and the eroded sur-

faces formed posterior wall of aneurism. The sac was filled with a laminated blood clot. The aneurism had not ruptured. Lymph glands in omentum much enlarged. Stomach was adherent to spinal column and diaphragm. Large scirrhus carcinoma was found, involving nearly all of pancreas and posterior wall, as well as lesser curvature of stomach. The cardiac orifice was nearly totally occluded by the growth. The growth was adherent to abdominal aorta and almost encircled it. The stomach was small; several small ulcers found. One ulcer on posterior wall had nearly perforated stomach, as the peritoneal coat formed floor of ulcer. Gall bladder was dilated and had a capacity of about 350 c. c.; contained large quantity of dark viscid bile. The sac had ruptured, as a large quantity of bile was found in peritoneal cavity. The malignant growth had encroached on and occluded common bile duct. The liver was tough and leathery on section and very light in color. Spleen was very small. Kidneys presented appearance of a subacute parenchymatous nephritis.

#### CANCER OF OMENTUM.

J. A.; aged 32 years; nativity, Norway; admitted to the United States Marine Hospital, San Francisco, Cal., March 2; died April 29, 1894, at 6:30 o'clock p. m.

*History.*—On admittance patient complained of intense pain in the back and over the abdomen. The abdominal cavity was distended with fluid. The patient passed dark, bloody urine. A provisional diagnosis of Bright's disease was made. Two days after coming in dyspnoea ensued from pressure of the ascites, necessitating paracentesis abdominalis. On palpating the abdomen a hard, nodulated tumor of irregular outline could be plainly felt. The larger portion of the tumor mass was in the upper half of the umbilical region and extended also into the epigastric and right lumbar and hypochondriac regions. The succeeding history was one of frequent tapplings, increasing doses of anodynes, and rapid emaciation.

*Necropsy (seventeen hours after death).*—Body extremely emaciated. Post-mortem rigidity, but no lividity. On opening the peritoneal sac a large fungoid growth, occupying the situation for the omentum, but overspreading the omental bounds, was disclosed. The tumor was more or less adherent by spongy outgrowths to the parietal reflections of the peritoneum and to the entire visceral coverings from the cardiac orifice of the stomach to the rectum, including also the liver, pancreas, kidneys, and spleen. The walls of the pyloric orifice of the stomach were greatly thickened with a dense, white, new tissue formation. Scattering patches of the parietal layer of peritoneum were much thickened and indurated, especially on the diaphragm and below the level of the umbilicus. The liver, pancreas, spleen, and kidneys when divested of their peritoneal coat appeared healthy. Microscopic examination of the tumor showed it to be of the alveolar type of the carcinomata. The alveoli are large and distinct and contain irregular groups of epithelial cells, mostly spherical, some fusiform and nucleated.

#### CANCER OF BLADDER—PYÆMIA.

M. G.; aged 38 years; nativity, Connecticut; admitted to the United States Marine Hospital, Chicago, Ill., June 10; died August 19, 1893.

*History.*—For several years had suffered from stricture of urethra, and shortly before admission had developed perineal abscess, which was followed by a urinary fistula and catarrh of the bladder. Was operated on for the fistula by perineal section, but grew steadily worse and finally died of pyæmia.

*Necropsy (fifteen hours after death).*—Lividity and rigor mortis marked. Body well nourished. Pericardial sac contained about 30 c. c. fluid. Heart normal in size; valves competent; had a fibrous patch on wall of right ventricle. The heart contained ante-mortem clots. Lungs: Left weighed 770 grams; right, 970 grams. Numerous small metastatic abscesses scattered throughout both lungs. Liver slightly

fatty, enlarged, syphilitic; contained numerous metastatic abscesses; weight, 3,330 grams. Kidneys: Left, weight, 330 grams; small cyst on posterior upper aspect; right, weight, 310 grams. Both organs were the seat of chronic nephritis and contained small abscesses. Bladder, weight, 870 grams. A carcinoma involved the whole superior posterior aspect of the bladder and adjoining tissues. It contained a large cavity 9 by 5 cm. in diameter. The walls of the cavity were stained with blood and contained a small amount of pus and débris. Brain normal; weight, 1,570 grams. Other organs not examined.

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## CONTRIBUTED ARTICLES.

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## CONTRIBUTED ARTICLES.

The following reports of special cases have been received:

### A CASE PRESENTING PECULIAR SUSCEPTIBILITY TO THE ACTION OF CANNABIS INDICA, ADMINISTERED FOR NEURALGIA.—RECOVERY.

By HENRY W. SAWTELLE, Surgeon, United States Marine-Hospital Service.

The physiological effects of cannabis indica, observed after the administration of the drug in small doses, with the clinical history of a case in which the symptoms were similar to those produced by hasheesh, may possibly be of interest to some as an illustration of the susceptibility of some patients to certain drugs. This peculiarity or idiosyncrasy is noticed occasionally in practice, and emphasizes the necessity of caution in the exhibition of medicines, especially new preparations or uncertain remedies. In this case the patient was under treatment for a severe occipital neuralgia, which was finally relieved by hemp after trying unsuccessfully many other remedies recommended in such cases. The literature of therapeutics in general shows that the preparations of hemp, especially the American variety, are very uncertain, and experience teaches that Indian hemp is the more reliable and should always be preferred. The case referred to was that of a well-developed seaman, aged 33 years, a native of Canada, admitted to the United States Marine-Hospital, Boston, September 20, 1893. The patient stated that he had been subject to similar attacks of neuralgia before. A blister to back of neck and antipyrine were ordered. Arsenic, opium (in form of Dover's powder), and gelsemium were given in turn without relief. In fact, the patient grew weaker rapidly. Iron, quinine, and strychnine were ordered. Morphia, hypodermically, at intervals, relieved the pain temporarily. As there was no specific history, potassium iodide was not given. On the morning of October 2, 1893, after a very restless night, the patient was extremely weak and unable to leave his bed. All treatment having failed to give relief, the administration of the fluid extract of cannabis indica was determined upon in doses of 5 drops. Five doses were given. The case was under the care of the interne, Dr. E. B. Stone, who carefully noted the symptoms. Upon visiting the patient October 2, at 8 p. m., his condition was as follows: Neuralgia relieved and the patient in a state of increased mental and motor activity, which was soon followed by partial delirium and hallucinations. Pupils were dilated. The hallucinations were of a jovial character, the patient being naturally of a jovial disposition. It has been observed by different authorities that the form of the hallucinations in these cases represents the mental and moral condition of the individual in his normal state. In this instance the patient talked freely and pleasantly, and when relating some incident he would burst into laughter. He first claimed the ceiling was falling, which he tried to support by extending his arms, and called loudly for help. Moved his bed to the opposite side of ward, and he imagined he saw pieces of timber floating in space about him. He left his bed and went to a corner of the ward, and became intensely excited over what he took to be a dog fight between a

large and small dog. He watched the imaginary fight for a few moments; then returned to bed and remarked that the large dog had torn the small one into pieces, and expressed sympathy for the small dog. At first he attempted to leave the ward through a window, and it was necessary to restrain him. The symptoms described continued three days. From the first the pulse was full and strong respiration normal. During the night he was troubled with erections of the penis. This drug has been regarded as an aphrodisiac, but Brunton says that the trials of it made in England "seem to show that it does not itself at least have any such action, and merely induces a condition of partial delirium in which Easterns may possibly have visions of a sexual nature, and, indeed, they try to give a sexual direction to the mental disturbance which the cannabis produces by mixing with it musk, ambergris, or cantharides." Bartholow remarks that aphrodisiac effects are said to follow the use of hasheesh; but impotence, which is common in hasheesh eaters, doubtless results from the repeated overstimulation of the sexual organs.<sup>1</sup> Dr. Edes reports that he ordered it for a long-continued headache without benefit, but the patient ceased to suffer from "the bad dreams that had previously annoyed her." Acting upon this hint, he adds, it was given to several others who had made similar complaints, with similar results; that is, the character of the dreams changed and became agreeable. The effect of the drug in reference to this particular complaint was not ascertained, as the patient referred to in this article had not suffered from troublesome dreams. There was slight anæsthesia of the lower extremities—and patient complained of weakness of legs for several days after effects of drug had passed off. No bad symptoms followed the use of the drug; appetite good from the first. During the first night he was unable to sleep at all, though chloral hydrate and potassium bromide were given in full doses at evening visit, and later morphine sulphate,  $\frac{1}{2}$  gr. (0.016 gm.). The second night chloral hydrate, 25 gr. (1.62 gms.) and bromide potassium, 40 gr. (2.60 gms.), in two doses, at intervals of four hours, were ordered at the evening visit and later  $\frac{1}{100}$  gr. (0.00065 gm.) hyoscine, hypodermically, after which the patient slept about an hour. He slept well during the third night without hypnotics, and continued to sleep soundly until the effects of the drug had entirely disappeared. The patient regained strength rapidly, and was discharged October 25, 1893, entirely recovered.

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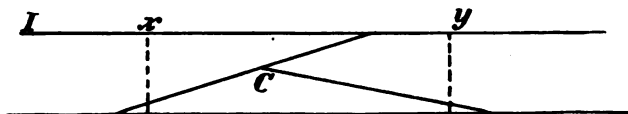
<sup>1</sup> Vide Boston Medical and Surgical Journal, September 14, 1893, page 273.

## COMPOUND FRACTURE OF TIBIA—SIMPLE FRACTURE OF FIBULA—RECOVERY.

By HENRY W SAWTELLE, Surgeon, United States Marine-Hospital Service.

J D.; aged 30 years; nativity, Newfoundland; admitted to the United States Marine Hospital, port of Boston, January 26, 1892.

The patient stated that, while walking on the street a few hours before admission, he slipped and on falling injured his right leg. Upon examination a fracture of both bones, right leg, lower third, was found. The tibia was exposed through a small opening, and there was a severe bruise and extravasation of blood about the point of injury. The wound was properly cleansed, the fractured bones were reduced, and the leg was dressed antiseptically and put up in plaster bandage. But high temperature following, the patient was anesthetized and wound freely opened and cleansed, and posterior felt splint applied. The wound was dressed daily, and on February 12 was again put up in plaster bandage and a window cut over fractured tibia. On February 17, there being some displacement of the fragments, the patient was etherized and the opening on tibial side of leg enlarged, and oblique fractures of the tibia were revealed, as shown by the accompanying diagram:



The fibula had united. The fragment of bone *c*, about 4 inches long and 1 inch wide, was removed. The ends of the bone were sawed off to the extent of a quarter of an inch at *x* and *y* and brought together with silver wire. Great care was exercised in preserving the periosteum intact as far as possible. With the exception of the second and third days after the operation, there was no rise of temperature. The wound was dressed antiseptically. The bone, which was merely a shell, failed to unite; the wire was removed on March 20 and a plaster cast applied. On April 13 the bandage was removed; wound carefully examined and found in good condition, with new bone forming. Fresh plaster bandage was applied. June 1 this bandage was removed and massage ordered until June 16. June 19 a sequestrum of bone about three-fourths of the circumference of the tibia and 1 inch in length was removed from lower fragment. July 28 two sequestra from upper portion of tibia removed. The larger of these was an inch and a half long by about one-fourth of an inch wide. By October 25 the wound was healed, and on the 30th of December the patient was discharged, recovered, and in a few months went to sea, his leg being strong enough to enable him to resume the occupation of fishing. This sailor was recently lost at sea, a little over a year after he left the hospital.

**COMPOUND FRACTURE OF VAULT OF SKULL, ACROSS LONGI-  
TUDINAL SINUS, WITH DEPRESSION—REMOVAL OF  
FRAGMENTS—ELEVATION—RECOVERY.**

By CHARLES R. ROBINS, M. D., interne, service of Surgeon Sawtelle.

Seaman, J. J.; aged 21 years; nativity, Norway; admitted to the United States Marine Hospital, port of Boston, Mass., May 30, 1894.

The patient stated that on the previous night he had fallen a distance of 30 feet, cutting a gash in the back of his scalp about 10 cm. long. A physician was sent for, who closed the wound by silk sutures. After sustaining the injury the patient remained unconscious for about six hours. He complained of feeling bruised and sore over the whole body, especially in his back. Palpation revealed what appeared to be a depression corresponding to the wound. The patient walked some distance to the hospital, and was able to give a clear account of himself.

Turpentine stupes were ordered for his back, and aconite was prescribed in drop doses to control circulation and prevent inflammation.

*May 30, 12 o'clock midnight.*—Found pulse intermitting, so stopped aconite.

*May 31, 6 p. m.*—Pulse intermitting every fourth beat and very slow. Temperature 39° C. Prescribed strychnine and digitalis.

*May 31, 9 p. m.*—Condition growing worse. Examination of wound showed a considerable collection of fluid. Opened with probe and evacuated a considerable quantity of blood that was beginning to turn to pus. Ordered ice bag to head.

*June 1, 9 a. m.*—Condition of patient not improved. Complained that vision was affected so that he could not see well. In a half stupor and continued to grow duller. Pulse intermitting. Temperature, 38° C.

*June 1.*—Surgeon Sawtelle examined the case and opened up wound thoroughly and cleansed with bichloride solution. Considerable fluid evacuated. Examination with finger in wound showed a depressed fracture. Both pupils dilated and did not respond to light. It was determined to open up the scalp well and make an effort to elevate the fragment of bone.

Patient was taken to operation room on stretcher at 10.30 a. m. Ether administered after a hypodermic of morphia and atropia. He went under the anæsthetic well. The scalp was shaved in the vicinity of the wound and cleansed antiseptically. An incision corresponding to the original cut was made, and then another at right angles to this, extending over the site of the depression. The scalp was reflected back, together with the periosteum, and the fracture clearly revealed. It was shown that the point of violence was just above the external occipital protuberance, the depression here being fully 8 mm. From this point, corresponding to the apex of a triangle, two lines of fracture, corresponding to the sides, extended, one upward for 4 cm., exactly over the longitudinal sinus, and the other outward 5 cm., just above the right lateral sinus. The base of the triangle was represented by a jagged crack, produced by the bone being bent there and not depressed. Connecting with this depression at the apex was a nondepressed split extending outward over the left lateral sinus for 2.5 cm. The affection of vision was accounted for by the depressed bone compressing the occipital lobe, which is the center of vision. The proximity to the sinuses made the locality so dangerous that trephining was precluded, and necessity for the most cautious and delicate measures indicated. In order to be able to elevate, it was necessary to remove the rough edge of the nondepressed bone that had

caught the depressed portion and held it firmly down. This was done by means of the bone forceps and chisel. Two crushed fragments of bone were found in the line of fracture that were pressing on the brain. These were removed.

It was found also that a small portion of the inner table of the skull had been splintered off here, but it was thought best to let it remain undisturbed, as its removal might possibly open up the sinus. The triangular piece of bone was then elevated, and the elevator inserted under the bone showed all pressure relieved. The wound was then cleansed with bichloride solution, a rubber drainage tube inserted, and the wound sutured with silk. The periosteum was brought back carefully with the flaps. Wound was dressed with bichloride gauze, bandaged, and patient taken to his bed on stretcher. He stood ether well.

*June 1, 3 p. m.*—Called by nurse to patient, who complained of being cold. Ordered hot bottles to feet and gave hypodermic of strychnine. Pulse regular and as good as could be expected. General condition good. No nausea.

*June 1, 6 p. m.*—Pulse slow, but strong. Condition good; has been sleeping during the day.

*June 2, 9 a. m.*—Pulse 42, but regular. General condition good. No nausea. Pupils nearly normal and respond to light. Did not sleep well during the night. Redressed head and found considerable discharge, but draining well.

*June 2, - p. m.*—Feeling quite comfortable all day, but head slightly sore this evening.

*June 2, 6 p. m.*—Ordered chloral and potassium bromide for sleeplessness.

*June 3, 9 a. m.*—Slept fairly well last night. Appears very bright; stupor entirely gone. Head feels slightly sore. Opened bowels with calomel.

*June 4, 6 p. m.*—Says his sight is improving greatly. Is not hungry, but takes all of his milk.

*June 5, 9 a. m.*—Continues to improve. Pulse regular, but very slow, being 48.

*June 6, 9 a. m.*—Took out stitches. Edges of wound healed by first intention and wound doing well; only slight discharge. General condition improving rapidly.

*June 8, 9 a. m.*—Pulse 72. Still improving.

*June 15, 9 a. m.*—Took out drainage tube entirely yesterday; but as there appears to be a tendency to accumulation of discharge, it was replaced.

*June 25, 9 a. m.*—Took out last small piece of drainage; had been shortening it gradually.

*June 26.*—Patient discharged entirely recovered. Vision as good as ever before.

After the operation this patient made an uneventful recovery. The wound was dressed every day until it had entirely healed. Drainage tube was kept in order to prevent any tendency for the dura to become infected.

Two points of especial interest in this case are its situation in reference to the sinuses, and the affection of vision, caused by compression of the center of vision, which was entirely relieved when the compression was removed.

## AMYOTROPHIC LATERAL SCLEROSIS, WITH REPORT OF A CASE.

By W. P. McINTOSH, Passed Assistant Surgeon, Marine-Hospital Service.

M. C.; aged 51; nativity, Ireland; sailor.

No history of syphilis. General health good. Occasionally used alcohol to excess. About four years ago he had a fall, after which he could not sit down or assume sitting position long at a time on account of pain in back. He could walk, stand, or lie down without pain, but after sitting a short time this pain became so severe as to be unbearable. His work allowed him to stand; he therefore continued on duty. On February 21, 1893, while under the influence of alcoholics, he sustained a fall of 10 feet distance, striking a hard floor with his back and shoulders. This was early in the night, and he lay as he had fallen until next morning. When he awoke he could not rise. In his own words, "My legs felt as if they were not my legs; there was no feeling in them, nor could I move them." The left arm was also paretic, owing to fracture of acromion and contusion of nerve. The face, left arm, and leg were contused. The pupils were normal. The eyelids, lips, tongue, and soft palate gave no evidence of paralysis of cerebral origin. The ankle clonus, patella reflex, cremasteric reflex, all absent. Sensation in the lower extremities also suspended. Sphincters of bladder and rectum normal. No bone lesion of spine. These symptoms would seem to indicate pressure on cord, resulting in flaccid paralysis and a break in reflex arc. We know that the cord may be compressed for a long time without causing any appreciable change. But in this case, when neither the reflex arc is destroyed nor cord destroyed in its entire diameter, the result must be spastic and not flaccid paraplegia.

The fact that this man was devoid of cutaneous sensibility, with loss of motive power in lower extremities, would indicate pressure on cord. Coming on suddenly without bone lesion leads to the belief that an effusion was cause of pressure. The absence of reflex phenomena would further indicate that lesion was either of anterior horns or posterior external columns in lumbar or lumbo-dorsal region. The loss of sensation in legs would point to latter region. After remaining in hospital about six weeks, during which time hot packs and mild current of electricity were used, he regained the sense of feeling as well as power of motion to a considerable extent. This would tend to show that effusion had been to a great extent absorbed. A week later he tried to walk. This effort cost him two months in bed, during which time sensation was good, and has so remained. But motion is greatly impaired. Atrophy of muscles of forearm and hand, and to a less extent those of leg, took place. There was not nor has there been any trouble with sphincters of bladder or rectum. But, owing probably to paresis of muscles of abdomen, he has not the power to force water from bladder, this viscus emptying itself when full. The rectum acts somewhat in the same way. He suffers greatly from constipation, no doubt caused by his confinement in bed; but when peristalsis is stimulated by cathartics or enemata he can not control till rectum is empty.

No tendency to bed sores. At the end of period mentioned he began to improve again. After the lapse of six months the patella tendon reflex, plantar reflex, and ankle clonus gradually returned, and then became greatly exaggerated. The cremasteric reflex is still absent, as is the abdominal. The muscles of both upper and lower extremities became hard and stiff. When leg was straight and he was told to exert his power, it required great force to flex it; when flexed, with instructions to hold it so, great strength to extend it. Spastic tendons. The muscles of

arm contracted to an extent that caused fingers to become flexed on hand. The fingers became clubbed at end and red at point. This, with contractures, give the hands the appearance of claws, which they still retain. The hand can be closed further, but not opened. The grip or squeeze is very weak. He complained for a long time of a feeling of coldness in his legs, though skin felt warm to touch. He still suffers occasionally in this way. Application of snow to skin causes feelings of burning, smarting pain, as if hot iron had been placed in contact with skin, causing patient to start and cry out. He is unable to raise arms above head, as he says the skin on his sides and under arms feels as if it were drawing up sides and tearing, causing so much pain as to lead him to desist (paralysis of chest muscles?). In trying to walk or stand he places feet close together, and walks with a dragging, shuffling gait, placing weight on center of foot—flat-footed shuffle. Soon loses control of legs from spastic contractures, jerking of reflexes, shaking of foot, tremor, etc.

There are at present no sensory disturbances. In fact, no pain has been present at any time, except that a feeling of a cord around waist gives pain, and dragging, shooting pain in chest when he sneezes, which he does pretty often. For eleven months after injury this man had no erections of penis. After this when he lay on his left side he invariably had erections. On several occasions he has experienced chilly sensations, and on one occasion chill was followed by fever of 40° C. Except for a tendency to laugh very readily, if such be a symptom at all, with credulity and emotional excitability, the psychic disturbances noted by P. Marie,<sup>1</sup> of Paris, as being characteristic of amyotrophic lateral sclerosis are not noticeable. In fact, in the six or eight cases I have observed psychic disturbances were exceptional. The French, though a brave and courteous people, are exceedingly emotional as well as credulous, and their mental equilibrium is more readily disturbed. This must account for Marie's observations.

Placing the disease under discussion in its proper place as a primary systematic lesion, which means, to borrow the expression of Vulpian, the lesions which settle in and circumscribe certain well-defined regions without encroaching on neighboring ones, for "there yet exists a considerable number of pathological states, evidently situated in the nervous system, which leave no material appreciable trace on the cadaver, or reveal them at most by the minutest lesions, without determinate character, incapable in any case to explain the principal facts in the morbid drama."<sup>2</sup> Tetanus and hydrophobia, true epilepsy, paralysis agitans, inveterate hysteria, and chorea, the "antique group of neuroses," though studied with success on several points, are still practically inaccessible to the anatomico-pathologist, and which exhibit themselves as so many Sphinxes which defy the most penetrating anatomy. It is a well-ascertained fact that the form of trouble under discussion is a secondary descending degeneration of either cerebral or spinal origin. If of cerebral origin, the lesion or foci must be in the Rolandic area, or, to be more exact, according to Flechsig, and more recently Charcot, the posterior segment—lenticulo optic—of the capsule. Divide the segment into three parts and the anterior two-thirds could not sustain a destructive lesion even of small extent without being followed by a descending degeneration of the corresponding pyramidal fasciculus, since the nervous fibers which traverse it seem to be a direct emanation from the pyramidal fasciculi. A destructive lesion in the cord at point of these white fasciculi would also produce a degeneration. In either case the lesion must be a destructive one and the degeneration a descending one, since the pyramidal fasciculi are incapable of an ascending degeneration, just as columns of Goll or Burdach are incapable of a descending degeneration.

It is scarcely necessary to call to mind the fact that degenerations, either ascending or descending, do not exist unless the destructive lesion attacks the white fas-

<sup>1</sup> Annals of Universal Medical Sciences, 1893, B 16.

<sup>2</sup> Charcot, *Charcot's Anatomy of Nervous System*, page 3.



ciculi. In order to account for a variety of clinical phenomena in connection with the four pyramidal fasciculi, it is well to bear in mind the observation of Flechsig and Pierret, and these are regarding the semidecussation designated generally as decussation of the pyramids (each pyramid giving origin to two spinal fasciculi, the one crossed, the other direct), but that this intercrossing is subject to variations is not so well known. Thus Flechsig gives three groups, in types. The first is the most common and consists in a symmetrical semidecussation, each pyramid furnishing a crossed and a direct fasciculus. Seventy-five per cent are of this type, the crossed being of most importance and ordinarily represented by 91 per cent of fibers of pyramid. Pierret has made observations reversing this proportion and making a variety of same type. In this the direct fasciculus is represented by 90 per cent, the crossed by 10 per cent of all fibers. The intercrossed are then hardly worth taking into account. A cerebral lesion, then, would give paralysis on same side of body as lesion, contrary to rule. The second type has been observed in 11 per cent (11 in 100 cases). It is the total decussation; the direct fasciculi fail completely. The third or asymmetrical type has been observed in the proportion of 40 per cent. In this case there exist only three fasciculi, one pyramid dividing into two, a direct and a crossed, the second pyramid being intercrossed in toto. The termination of these pyramidal fasciculi also interests us. The pyramidal fasciculus grows smaller gradually as it descends toward the filum terminale. This fact proves that its fibers gradually disappear in the descending course of the fasciculus through the different spinal regions. Flechsig and Charcot both assert that the termination of the nervous fibers, which appear to be a direct emanation from the constituent fibers of pyramidal fasciculi, is not in the anterior roots, because, while the anterior cells and anterior roots are already greatly advanced in development, the pyramidal fasciculi are barely traced.<sup>1</sup> There can therefore be no continuity. But the opinion of the majority of writers is that a connection does exist between the terminal extremities of pyramidal fibers and the multipolar motor cells. It is also possible that some of the fibers are prolonged into the commissure and thus reach the opposite side of the cord.

The causes of amyotrophic lateral sclerosis are somewhat obscure. That it may be caused by injuries we see in the present case. It is probable that anything that will cause spastic spinal paralysis, such as traumatic influences, exposure to cold, wet, etc., will also cause this. In the diagnosis much may be gained by observing that which does not exist as well as that which does, if duly impressed with the negative symptoms, viz, the absence of sensory impairment, of bladder troubles, and bed sores. The positive symptoms are at first confined to upper extremities. The rigidity of limbs, increase of all muscular reflexes, with a true motor paresis, is more characteristic of the disease first described by Seguin in 1873 and later by Erb as "a peculiar paraplegiform affection"—lateral sclerosis. In fact, the amyotrophic form is only a variety or type of the same disease, the motor cells having the destructive effects of lesion transmitted to them at different points, as do the anterior cornu, the latter causing atrophy. Spitzka accounts for this atrophy by the disappearance of many of the fibers which run into the gray substance from the reticular process. He states that the cells in the anterior horns are not involved, as he has observed, although in its gross dimensions the anterior horns seem to be as a whole atrophied. I have been much interested in a recent paper<sup>2</sup> by Dr. Hammond. But that amyotrophic lateral sclerosis and progressive muscular atrophy are the same clinically and pathologically I can not agree. That spasticity often precedes the atrophy and paralysis, or rather paresis, is true, but that the spastic symptoms or the excitable tendon reflexes disappear when atrophy and paresis begin is not true, as evidenced by case now under observation. Furthermore, in progressive muscular atrophy we have no contractures, nor do we have periods of rest or apparent improvement, as in

<sup>1</sup> The Anatomy of the cord in newborn.

<sup>2</sup> G. M. Hammond, New York Medical Journal January 6, 1894: Progressive Muscular Atrophy.

amyotrophic sclerosis, but a progression. Again, as pointed out, neither ascending nor descending degenerations are possible when lesion is limited to gray substance. Profound alterations of cord, when limited to gray substance, either acute, as infantile paralysis, or chronic, in protopathic spinal amyotrophy, are never followed by descending degenerations, unless it be by accidental propagation to the white fasciculi.

Again, according to the Wallerian law of secondary degenerations of nerves, it is always in a direction from the trophic centers. The pyramidal fasciculi can only degenerate downward. The only fasciculi in lateral column that will submit to an ascending degeneration are the direct cerebellar fasciculi, and so far as known no symptomatology has been affixed to their lesions. Laying aside the theories of muscular origin and of peripheral nerve origin of progressive muscular atrophy, the disease has been thoroughly studied and ably discussed in the past twenty-five years by Eisenmann, Roberts, L. Clark, Erb, Friedreichs, Charcot, Wood and Dercum, Osler, etc. A majority of these and other observers show that a decided majority of cases involve the anterior cornua alone, or these in connection with the antero-lateral columns. The number of cases observed in which antero-lateral columns alone or posterior columns and posterior nerve roots are involved are very limited, and more accurate investigation increases the number of instances in which lesions of anterior cornua are found. And as the fibers of anterior roots arise from the cells of anterior cornua, disease of latter must affect unfavorably the nutrition of the former, hence their atrophy. This disease, then, would be regarded as a chronic anterior poliomyelitis, and the apparent extension to other parts of cord, if at all, is merely a coincidence, or on the ground of continuity of these parts. The pathological lesions are in no way the same, nor are the clinical phenomena in any way allied in progressive muscular atrophy and amyotrophic lateral sclerosis, although progressive muscular atrophy may at times affect nearly all the columns of the cord. Anæsthetic leprosy, labioglosso-pharyngeal paralysis, disseminated sclerosis, etc., are not difficult of differentiation if origin, course, and negative symptoms be considered.

*Treatment.*—The treatment of amyotrophic lateral sclerosis and its allied affection, bulbar paralysis, like that of progressive muscular atrophy, can be but palliative and symptomatic. Hence the lesion is progressive in spite of drugs. Care of patient, with attention to diet, exercise, climate, baths, etc., all should be directed. Most important of all is rest, as it seems to retard the progress of disease. Strong tonic treatment is indicated. Strychnine, if used at all, should be carefully watched and stopped when reflex excitability becomes marked. In the case which I have now under observation I am under impression that extract of Indian hemp has done most good. He has used remedy for about one year now. It acts probably by contracting blood vessels as well as quieting nervous irritability. Were it possible to absorb any of new-formed tissue, the combination of iodide of potassium and ammonium chloride should do some good. Know nothing of barium chloride. Electricity to exercise the paretic muscles is palliative only. The cells controlling muscles are degenerating, and a progressive atrophy will not be prevented.

## CHRONIC PULMONARY PHTHISIS WITHOUT TUBERCLE.

By A. C. SMITH, Passed Assistant Surgeon. Marine-Hospital Service.

It happened that the patient whose case is here described came under my treatment on two occasions, at different hospitals, and my observation of him, therefore, extended over a considerable period of time. The case proved a very interesting one and very unusual in character; for, while the physical signs and other symptoms resembled closely those of pulmonary tuberculosis, I succeeded in demonstrating, to my own satisfaction at least, that the disease was not due to tubercle and that the tubercle bacilli were not present in the lungs.

Nils Johnsen, a native of Norway, aged 46 years, was admitted to hospital as a patient of the Marine-Hospital Service at Galveston, Tex., January 2, 1892, and was discharged March 8, 1892. He was admitted to the United States Marine Hospital at Memphis, Tenn., October 13, 1893, and was discharged January 22, 1894.

*Family history.*—His father was drowned at the age of 57 years. His mother died at the same age of an affection of the lungs, from which she had suffered for some eighteen years. She had had occasional spitting of blood, and her disease must have been similar to that from which the son is now suffering, or the counterpart of it. One brother died at the age of 53 of pneumonia. Another brother and a sister died in youth, not of any lung disease. He is unmarried and has no children.

*Personal history.*—The patient dates the beginning of his disease of the lungs about the year 1882, when he began to have a cough and became considerably debilitated. Two years previous to that he had a venereal ulcer, and received constitutional treatment for a short time. I questioned him carefully, but could not make certain of a history of syphilis. He gave no clear and positive account of secondary symptoms. He does not give a history of any other important sickness. The cough became chronic, and he sought hospital relief at intervals on account of it, meanwhile following his vocation of seaman. The cough and debility, with sometimes night sweats and sometimes slightly bloody expectoration, are the symptoms he told of. He is recorded in the hospital register at Galveston, Tex., as having been treated there for tubercle of lung October 26 to November 7, 1888, February 11 to 26, 1889, and July 6 to August 28, 1889. He said that he was treated in the United States Marine Hospital at Chicago, Ill., in the year 1890, for the same disease. He has followed the life of a sailor from boyhood, sometimes at sea, but a greater length of time on the Great Lakes of America.

*Physical signs.*—A man of thin physique, above the medium height, of fair complexion and reddish-yellow hair and beard. Upon the first examination of the patient I formed the opinion that the disease was not due to tubercle, although much resembling pulmonary tuberculosis. Besides the excessively long duration of the disease and some peculiarities in the condition of the lungs, particularly the contrast between the two, it was a conspicuous fact that the distinctive cachexia of tubercle was absent. The color and expression of the countenance were good, and the distressful, drawn look was not present. Neither did the patient suffer with that endless variety of pains and discomforts which make tuberculosis so distressing to the physician as well as to the victim.

January 3, 1892, the following observations were made from physical examination: General nourishment fair. Fingers extremely clubbed. The upper part of the left side of the chest is much retracted and does not expand at all in respiration. The lower part of this side is also somewhat retracted, the whole effect being to make him appear bent slightly to the left. The right side of the chest is a little retracted

at the apex of the lung, and, although expanding in all parts, does not expand well in respiration. The percussion note over the left side of the chest is dull, with the exception of an area to the outer side of the nipple, where it is resonant, but a little high pitched. A little of the cracked-pot resonance can be detected at the apex of the left lung. The percussion note over the entire right side of the chest is resonant and somewhat tympanitic, as in emphysema. Auscultation shows the respiratory sounds in the left lung much diminished. The apex gives no sound except with forced respiration. There is a distinct click heard with inspiration on this side. In the right lung the respiratory sounds are rough, with squeaking rales and prolonged expiratory sounds. Thus the percussion note and respiratory sounds of the right lung indicate an emphysematous condition throughout. If tubercle is present, it is strange that one lung should be in this condition while the other is almost totally involved in the disease. The voice is not transmitted in any part of the chest, as I would expect to find it. There is no distinct bronchophony, and whispered words are not transmitted. There is a harsh murmur to be heard over the apex of the heart with the systole. This is apparently due to friction in the pleural cavity where it overlaps the heart.

A specimen of the patient's sputum was given January 4 to Prof. Allen J. Smith, of the University of Texas medical department, for examination. He reported failure to find the tubercle bacillus. January 12 I examined a second specimen carefully without success in finding bacilli.

During his period of treatment at Galveston little change took place in his condition more than the improvement resulting from rest and comfortable living. For the first month expectoration was abundant, and at the last of that period profuse and tinged with blood at times. After that there was evidence that a cavity had been emptied in the upper lobe of the left lung. The cough and expectoration diminished, and the patient said he felt better. During the first week in the hospital he had slight variations of temperature, but he did not have hectic fever at any time. Diarrhœa was present as an annoying symptom, but yielded to treatment. Proceeding on the theory that the disease was syphilis of the lungs, I gave antisypilitic medicines for a length of time, varying between the mixed treatment and the iodides of sodium and potassium. I never perceived any effect from them. Cod-liver oil and malt extract were also given.

When he applied to me for relief at Memphis he seemed as if I had seen him only the day before, his look of comfortable invalidism unchanged by the interval of nearly two years. I had no record of his weight, but judged it had not varied much. He said he had spent the greater part of the time upon and about the lakes. He had been better and worse at times, and he gave a history of a considerable hemorrhage from the lungs in the spring of 1893. He complained of shortness of breath and seemed less capable of exertion than when last seen in Galveston. I examined his chest with a great deal of interest, with the following findings:

The left side of the patient's chest is much shrunken and is almost completely motionless in respiration, while the right side expands quite freely. The left lung is solidified and is in a condition which might be described as withered. The percussion note on this side is perfectly flat and there is no vesicular murmur to be heard. Tubular breathing and click-clack rales are heard. If there is a cavity in the upper lobe of the lung, it is difficult to distinguish it from an expanded bronchus. The percussion note on the right side is a little flat at the apex, but elsewhere rather tympanitic. The respiratory sounds in this lung seem exaggerated except in a small area at the apex, where is tubular breathing, and the lung is evidently trying to do the work of both. Bronchophony may be heard throughout the left lung and at the apex of the right lung. The heart beat is visible to an unusual extent on the left side of the chest on account of the depression of the chest wall. It is regular and strong. There is a loud friction murmur with the systole, heard where the beat is visible.

Thus the change which had taken place in the interval above referred to consisted in hardening and contraction of the left lung, completing its destruction, and some invasion or extension of the disease in the apex of the right lung. The peculiar cachexia of tuberculosis was as notably absent as ever. In a later examination his respiratory capacity was tested and found to be 80 cubic inches, about one-third of what it should be.

The patient was exhibited at a meeting of the Memphis Medical Society and also at a meeting of the Tri-State Medical Society, and was the subject of much discussion and of opposed opinions among physicians present. Several examinations of his sputum were made at different times by Dr. E. C. Ellett and by Dr. Henry Posert, of Memphis, and all reports showed the presence of shreds of disintegrated lung tissue, but no tubercle bacilli. Dr. Posert reported finding shreds of elastic tissue.

From the result of the repeated examinations of the sputum and from the peculiar characteristics of the disease I am convinced that there is here a distinct case of chronic wasting of the lung not caused by the tubercle bacillus. Opposed to the theory that the case is one of past or cured tuberculosis is the fact that the disease is making progress and disintegration of the lung is taking place at the present time, as shown by blood and shreds of tissue in the sputum.

There was no special change in his condition during his stay in the hospital at Memphis. At times night sweats evidenced his debility. His sputum was sometimes streaked with blood. He was troubled with moderate diarrhoea, and he had some slight malarial attacks, which were stopped with quinine.

Johnsen is a frequenter of marine hospitals, his movements being affected by the roving disposition of the sailor, and is likely to end his days in one. A thorough examination of the pathology of his lungs would be interesting and valuable.

## APPENDICITIS—OPERATION—RECOVERY.

By E. R. HOUGHTON, Passed Assistant Surgeon, Marine-Hospital Service.

W. J. B.; aged 22 years; nativity, Pennsylvania; admitted to the United States Marine Hospital, Vineyard Haven, Mass., April 29; discharged June 23, 1894, recovered.

*History.*—Patient was in excellent health until during the night of April 27, when he was awakened from sleep by what he supposed was a blow on the abdomen from one of his shipmates. He felt considerable pain, and thought it must be due to cramp colic. On admission, April 29, he was suffering from severe pain in the abdomen, which was greatly distended, and from retention of urine. He had been troubled with constipation for some time previously. Examination revealed tense and painful abdomen, hard lump in right iliac fossa, heart and lungs, etc., normal. Temperature and pulse normal. Everything seemed to point to a fecal impaction, and patient was treated accordingly with enemata, castor oil, and hot bath; later hot applications to abdomen. Retention of urine was relieved promptly by the bath.

The next day the patient had a number of large movements of the bowels which were yellow in color. The pain and tension of abdomen were greatly relieved and patient felt able to get up.

*May 1.*—Chill and profuse sweat during night; temperature, 38.4° C. Bowels moving freely.

*May 2.*—Slight sweat; all pain limited to lump in the right iliac fossa; pus suspected.

*May 3.*—No sweat; temperature normal; pain much less and intermittent; the lump painful only to touch. Bowels still moving several times daily.

*May 5.*—Temperature, 38.2° C. at night, 37.3° C. this morning. Bowels still moving several times daily; fluctuation fell in inguinal lumbar region. Patient refused to be operated on until arrival of his father, who had been telegraphed for.

*May 6.*—A large fluctuating tumor suddenly showed itself to-night, and an operation was decided upon, after consulting with Dr. Winthrop Butler, who assisted. The patient still refused an operation unless we could prove pus to be present. This was done with an aspirator, about half a gill of foul-smelling pus being withdrawn. Chloroform was used. An incision 4 inches long was made at outer border of and parallel with rectus muscle, and the sac brought into view. As much pus as possible was aspirated before opening sac. The appendix was at once seen, lying at bottom of cavity, but on seizing it with forceps it was found to be detached. The closed extremity was apparently normal, but the attached end was black and gangrenous; it had evidently sloughed off. The sac was cleansed and filled with plain gauze and wound dusted with iodoform. Temperature, 35.8° C. before operation, 37.4° C. after. For the first four days there was considerable discharge of foul pus and sloughs, but on the 16th, ten days after the operation, wound was nearly filled up; there was no discharge, and patient was sitting up in bed. By June 1 the wound was filled up, but the skin refused to cover the granulations; so on June

10 five skin grafts were applied, of which three were successful, and on the 23d of June patient was discharged entirely healed, except small point in center of wound, which healed in less than a week after his departure.

In October patient called to show his wound, which was perfectly healed. He had that day helped pull in a large hawser requiring the united strength of five men and taking thirty minutes to accomplish. This is considered one of the hardest bits of work aboard a tug, and yet our patient did his share without the slightest inconvenience.

*Remarks.*—The cause in this case would seem to be fecal impaction, which patient undoubtedly had in a mild form.

The temperature after the operation never once rose to 38° C., the highest being 37.8° C. at 5 p. m. the next day.







AN UNUSUAL CASE OF ELEPHANTIASIS ARABUM.

## AN UNUSUAL CASE OF ELEPHANTIASIS ARABUM

By L. E. COFER, Assistant Surgeon, Marine-Hospital Service.

The original of this photograph has received treatment in the Marine Hospital, Port of Savannah, Ga., in the last few months, for several diseases; and the fact that he has never complained of inconvenience from elephantiasis, of which disease he is plainly a victim, made his case, to my mind, worthy of mention.

H. I.; aged 40 years; nativity, Georgia; color, black. At age of 19 had an attack of malarial fever and catarrhal jaundice, and a few days after a supposed recovery from this trouble had a return of the fever. This ceased abruptly, and an erythematous redness and swelling of the thigh, knee, and leg of the left side was noticed. These symptoms lasted five days, during which time he noticed "that his leg was growing larger." From that time to the date of this writing he claims that his leg has been slowly getting larger. An examination shows that the integument and the subcutaneous tissue are greatly thickened. There is some swelling of the lymphatic glands. The following are the peculiar points connected with his case:

- (1) No other case can be found on the Georgia seaboard, and it is highly probable that this is the only case in the State.
- (2) He has had the disease for twenty-two years and there has been no perceptible change in his condition.
- (3) He suffers no inconvenience and his physical condition is good.
- (4) His father and mother were free from this disease and his children are perfectly sound.
- (5) There has never been a tendency to cracking and sloughing of the diseased tissues.

## CHOLECYSTOTOMY.

By J. B. EAGLESON, Acting Assistant Surgeon, Marine-Hospital Service.

C. F.; aged 59 years; an American; was admitted to the marine ward at Providence Hospital, Seattle, Wash., August 5, 1893, with well-marked jaundice of two weeks' duration.

For a few years past he had not enjoyed his usual vigor, but had suffered from no special disease. He gave no history of any severe colics and no jaundice until the present illness. A few days before the jaundice appeared he felt a sense of soreness in the region of the liver, accompanied by loss of appetite and occasional vomiting. On admission to the hospital there was slight tenderness on percussion over liver, but no tumor or enlargement could be found. The tongue presented a dark-brown coating; he had no appetite, and the stools were putty colored. His urine contained a large amount of bile pigment. His temperature ranged from normal to 99.5° F. At this time it was thought that the jaundice was caused by a catarrhal inflammation of the common duct. There was no change in the symptoms until August 9, when he had a slight chill, followed by a sudden rise of temperature to 103° F. He was put on occasional large doses of calomel and small doses of quinine at frequent intervals. The temperature gradually subsided, his appetite improved, the stools became darker, and the jaundice faded somewhat.

On August 2 he had another slight chill, and the temperature again went up to 102.5° F. The vomiting returned, the stools became light colored again, and the jaundice increased. At this time there was a marked tenderness over the region of the gall bladder, but no sharp pains. Hot turpentine stupes were applied over the abdomen and the calomel-quinine treatment was repeated. The fever, vomiting, and tenderness again subsided; but the jaundice persisted, and he grew weaker and lost flesh. After a few days the evening temperature was frequently below 98° F. During the following three weeks the case was carefully watched, and it soon became evident that the cause of obstruction in the duct was of a more permanent character than catarrhal inflammation, unless occlusion of the duct had resulted from inflammatory adhesions.

The diagnosis appeared to rest between impaction of a gallstone in the common duct and an obstruction from pressure upon the duct by a malignant growth encroaching from some of the neighboring organs. The absence of attacks of hepatic colic at any time during the history of the case, and especially at the commencement of the present illness, before the appearance of the jaundice, seemed to exclude the descent of a gallstone into the duct. On the other hand, the absence of any tumor or distention of the cyst, such as would be likely to occur from pressure on the common duct, together with the high temperature during the first few weeks of the attack, seemed to quite effectually exclude a malignant growth. As the patient's condition did not improve, an exploratory incision was considered justifiable, at least to obtain a proper diagnosis, and with a possible chance of being able to relieve the obstruction.

Beginning at the inner end of the tenth rib, an incision was carried downward 4 inches, and later 2 inches to the right, across the lower border of the liver, making a V-shaped cut through the abdominal wall. As the result of the extensive inflammation, the under surface of the liver was found to be firmly adherent to the omentum, stomach, and intestine, so that the gall bladder could not be reached from any direction. On palpation a hard, nodular tumor could be felt deeply between the under

surface of the liver and the stomach, in the location of the pylorus and ducts. It felt very much like a cancerous growth in the pylorus or head of the pancreas. On separating the adhesions between the stomach and the liver the inner side of the gall bladder was torn open, revealing its cavity packed with calculi, but containing no bile. It was this mass of stones in the contracted cyst, embedded among the adhesions between the organs, that gave the feeling of a nodular tumor. The walls of the bladder were so friable and adherent to the stomach and liver on either side that the tear extended through its whole length. When the stones contained in the bladder were scooped out the cystic duct was also found to be packed full of small ones. These were removed, and a single one, larger than any of the others, measuring seven-eighths of an inch in the long and five-eighths of an inch in the short diameter, was found firmly lodged in the common duct, just below the union of the cystic and the hepatic ducts. This was removed with some difficulty by passing a small scoop, bent at a right angle, beneath it and lifting it out. When this was out of the way a large probe could be readily passed down through the duct into the duodenum.

The question now arose as to the best method of dealing with what remained of the sac in its contracted and friable condition. Its edges could not be brought out and stitched to the skin, or even to the aponeurotic layer of the abdominal wall or parietal peritoneum, as suggested by Mr. Mayo Robson in a recent paper in the *British Medical Journal*. Its torn and ragged edges could not be closed by sutures with any hope of success. Owing to the firm adhesions to the stomach, intestines, and liver, and its softened condition, the entire removal of the bladder would have been a very tedious and difficult task. In fact, it was practically obliterated already by the results of the inflammation, so we considered that the best thing to do was to pack the cavity with iodoform gauze down to the junction of the cystic with the common duct, hoping to get complete obliteration from the resulting granulations. The ends of the strips of gauze were carried out through the abdominal wound, which was closed with silk worm gut sutures.

The wound healed by first contact throughout, except the opening left for the gauze and a small mural abscess which afterwards formed at the angle of the incision from strangulation of the small point by the deep sutures. The gauze was removed on the fourth day, and the cavity, after being thoroughly irrigated with a 1 to 2,000 bichloride solution, was repacked. This was repeated every second day until the opening closed by granulation, in three weeks. But little bile, and occasionally a small quantity of clear, thick mucus, discharged from the wound during the process of healing. The stools gradually resumed a normal color, the appetite returned, and he gained flesh rapidly.

On the eighth day after the operation five stones were washed out by the irrigation, and four more were removed on the tenth day. They had evidently been lodged in the hepatic duct or some of its branches.

This made a total of eighty-seven stones removed altogether. Their total weight after being dried was 16.7 grams. A few days since the patient reported himself as "feeling better than he had for several years," and he has gained 50 pounds since the operation.



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**STATISTICS**  
**UNITED STATES MARINE-HOSPITAL SERVICE.**

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## STATISTICS OF THE UNITED STATES MARINE- HOSPITAL SERVICE.

The following statistical tables are self-explanatory:

TABLE I.—COMPARATIVE TABLE OF NUMBER TREATED—1868 TO 1894.

Fiscal years.	Number of places at which re- lief was furnished.	Number of sick and disabled seamen fur- nished re- lief.
<b>Prior to reorganization:</b>		
1868.....	64	11,585
1869.....	64	11,356
1870.....	74	10,580
<b>After reorganization:</b>		
1871.....	72	14,256
1872.....	81	13,156
1873.....	91	13,529
1874.....	91	14,356
1875.....	94	15,009
1876.....	94	16,808
1877.....	100	15,175
1878.....	210	18,223
1879.....	210	20,922
1880.....	210	24,860
1881.....		52,613
1882.....		56,184
1883.....		40,195
1884.....		44,761
1885.....		41,714
1886.....		43,822
1887.....		45,314
1888.....		48,203
1889.....		49,518
1890.....		50,671
1891.....		52,902
1892.....		53,610
1893.....		53,317
1894.....		52,803



TABLE II.—EXHIBIT OF OPERATIONS OF THE SERVICE DURING THE YEAR ENDED JUNE 30, 1894.

Porta.	Total number of sea-men treated.	Per-centage of sea-men treated.	Admit-ting the year.	Total treated in hos-pital.	Dis-charged.	Died.	Remain-ing in hos-pital June 30, 1894.	Number of days relief in hos-pital.	Number of seamen furnished relief.	Number of times relief was furnished.	Number of persons examined physically, includ-ing pilots.	Amount ex-pended.	Tonnage tax collected.
<b>Total.</b>	<b>52,808</b>	<b>865</b>	<b>12,860</b>	<b>18,785</b>	<b>12,407</b>	<b>448</b>	<b>870</b>	<b>399,186</b>	<b>89,078</b>	<b>61,195</b>	<b>2,018</b>	<b>\$589,741.75</b>	<b>\$689,088.47</b>
Albany, N. Y.	4	1	4	4	3	1	1	269	36	100	17	372.00	138.00
Alexandria, Va.	41	1	18	18	17	1	1	358	35	61	1	718.00	1,725.30
Apalachicola, Fla.	53	1	27	28	17	1	4	631	50	50	1	684.35	3,419.06
Ashtabula, Ohio	206	3	39	42	36	1	5	882	164	362	63	1,145.63	25,596.39
Astoria, Oreg.	31	1	22	22	18	1	4	490	9	13	2	17,245.22	54.54
Baltimore, Md.	2,072	41	506	547	488	20	39	19,001	1,625	2,063	63	1,875.94	47.24
Bangor, Me.	130	4	50	54	49	2	3	1,247	76	104	2	1,432.53	22.13
Barnstable, Mass., and subports.	111	4	38	42	42	1	1	778	111	323	1	1,400.65	2,373.61
Bath, Me.	78	4	6	6	6	1	1	105	48	102	1	123.85	3.12
Beaufort, N. C.	54	1	4	4	4	2	2	14	36	42	1	188.00	125.76
Beaufort, S. C.	40	1	4	4	4	1	1	15	23	59	197	26,101.00	47,838.12
Belfast, Me.	15	1	1,019	1,070	965	27	78	31,357	2,642	3,071	6	100.00	6,600.78
Bismarck, N. Dak.	28	1	15	15	12	1	3	503	63	105	72	10,087.69	385.35
Boston, Mass.	8,412	51	1,019	1,070	965	27	78	31,357	2,642	3,071	6	100.00	6,600.78
Bridgeport, Conn.	18	1	15	15	12	1	3	503	63	105	72	10,087.69	385.35
Brownsville, Tex.	108	6	34	40	36	4	24	1,006	1,803	2,503	2	8,283.22	54.93
Brunswick, Ga.	2,136	13	319	332	294	14	24	7,026	1,803	2,503	2	8,283.22	54.93
Buffalo, N. Y.	5	1	4	4	3	1	1	119	488	670	84	158.00	4,088.90
Burlington, Iowa.	839	7	344	351	326	13	12	5,499	112	154	39	24,884.98	9.48
Calo, Ill.	161	4	7	7	7	1	1	14	3	6	13	12,538.53	186.55
Cambridge, Md.	129	10	135	145	128	6	1	3,557	129	154	9	270.14	321.15
Cadiz, Me.	960	21	424	453	428	16	39	17,939	815	133	65	13,248.90	112.03
Cedar Keys, Fla.	21	49	278	280	280	10	20	9,871	2,480	3,031	10	1,380.16	138.45
Charleston, S. C.	2,963	32	278	280	280	10	20	9,871	2,480	3,031	10	1,380.16	138.45
Charleston, Tenn.	1,117	23	253	276	254	7	16	9,672	1,170	1,867	16	56.00	994.86
Chicago, Ill.	1,446	14	8	9	6	1	2	203	5	39	3	370.14	3.25
Cincinnati, Ohio.	14	1	8	9	6	1	2	203	5	39	3	370.14	3.25
Cleveland, Ohio.	28	17	336	353	315	9	29	12,329	1,985	2,114	65	13,248.90	112.03
Corpus Christi, Tex.	1,743	67	3	43	39	4	4	801	24	37	10	1,380.16	138.45
Darien, Ga.	266	2	32	34	33	1	1	786	221	281	16	1,075.44	994.86
Delaware, Mich.	23	183	4	4	4	4	4	34	128	244	3	370.50	145.29
Detroit, Mich.	183	183	4	4	4	4	4	34	128	244	3	370.50	145.29
Dubuque, Iowa.	44	44	3	3	3	3	3	69	49	181	3	844.50	108.11
Duluth, Minn.	266	2	32	34	33	1	1	786	221	281	16	1,075.44	994.86
Eastport, Me.	23	183	4	4	4	4	4	34	128	244	3	370.50	145.29
East Sagadahoc, Mich.	183	183	4	4	4	4	4	34	128	244	3	370.50	145.29
Edmonton, N. C.	44	44	3	3	3	3	3	69	49	181	3	844.50	108.11
Edgartown, Mass.	183	183	4	4	4	4	4	34	128	244	3	370.50	145.29
Ellsworth, Me.	44	44	3	3	3	3	3	69	49	181	3	844.50	108.11



TABLE II.—EXHIBIT OF OPERATIONS OF THE SERVICE DURING THE YEAR ENDED JUNE 30, 1894.—Continued.

Ports.	Total number of sea-hospital men treated.	Pa- tient hospital July 1, 1893.	Admit- ted dur- ing the year.	Total Dis- charged.	Died.	Remain- ing in hospital June 30, 1894.	Number of days relief in hospital.	Number of seamen of office furnished relief.	Number of times relief was furnished.	Number of persons examined physically, includ- ing pilots.	Amount ex- pended.	Tonnage tax collected.
Portland, Oreg. ....	388	4	96	100	93	1	2, 104	286	384	20	4, 138.48	\$10.83
Portsmouth, N. H. ....	27	1	15	16	16		333	11	11		633.00	77.55
Port Townsend, Wash. ....	336	18	139	167	136	7	7, 138	179	216	28	11, 877.56	8, 566.77
Providence, R. I. ....	247	5	• 106	111	106	1	2, 020	126	198		2, 473.60	4, 405.78
Purveying division.											41, 464.48	
Richmond, Va. ....	57	2	14	16	14		281	41	43	17	841.00	370.56
Rockland, Me. ....	236	1	205	206	109	3	3, 563	30	30		4, 102.61	
Rome, Ga. ....	31	31	3	3	2		13	28	73		185.40	
Sag Harbor, N. Y. ....	29							29	225		216.00	
Saginaw, Mich. ....	81		42	42	37		1, 468	39	55		1, 248.55	
St. Louis, Mo. ....	1, 846	31	507	538	475	25	14, 384	1, 308	1, 735	19	13, 923.48	
St. Paul, Minn. ....	13	1	5	6	5		69	7	16		375.00	81.09
Salaries, Supervising Surgeon-General's Office	21										24, 720.00	
Salem, Mass. ....	256	5	143	148	147	1	4, 929	108	21		92.40	263.28
San Diego, Cal. ....	201	1	141	142	132		2, 685	59	94	13	6, 705.34	2, 817.51
Sandusky, Ohio. ....	3, 330	97	710	807	683	39	43, 232	2, 523	5, 697	143	3, 086.06	
San Francisco, Cal. ....	138	7	78	85	77	1	3, 338	53	136		32, 342.64	37, 317.36
San Pedro, Cal. ....	895	10	90	100	86	2	1, 750	295	288		3, 129.45	
Sault Ste. Marie, Mich. ....	934	8	253	261	245	7	4, 295	673	288	19	2, 158.19	
Savannah, Ga. ....	671	10	117	127	118	4	4, 076	544	1, 107	26	7, 516.02	11, 834.10
Seattle, Wash. ....	124	1	16	16	15	1	311	108	840		4, 019.37	
Shreveport, La. ....	21	1	4	5	5		125	16	30		1, 170.65	
Sitka, Alaska. ....	382	22	22	22	22		349	360	438		647.95	663.08
Solomons, Md. ....	40	11	11	11	11		349	29	36		696.00	
Superior, Wis. ....	29	26	26	26	2		581	3	3	5	636.24	
Tacoma, Wash. ....	19	2	2	2	2		67	17	28		97.45	2, 327.89
Tampa, Fla. ....	227	1	107	108	106		1, 846	119	209		1, 689.35	
Tappanhook, Va. ....	259	4	109	113	104	4		146	212		1, 836.80	
Toledo, Ohio. ....	6							6	23	90	500.00	
Tucker, N. J. ....	62	1	55	56	52	2	1, 013	6	12		1, 563.50	
Tuckerton, N. J. ....	303	6	118	124	119	3	2, 909	179	187	1	8, 970.08	
Vineyard Haven, Mass. ....	71	2	30	32	32		652	39	73		15, 573.40	
Washington, D. C. ....	558	7	96	103	88	7	3, 216	465	560	23	1, 016.30	4, 504.08
Wheeling, W. Va. ....	4							4	58		8, 847.25	2, 247.45
Wilmington, N. C. ....	1										84.75	187.70
Wiscasset, Me. ....	5		5	5	4	1	73					
Cape Charles Quarantine	5		5	5	4	1						
Delaware Breakwater Quarantine.	1		1	1	1							
Gulf Quarantine	25	1	16	17	15	2	188	8	14			
Key West Quarantine.	79		7	7	3	3	65	73	166			



TABLE III.—SUMMARY OF PHYSICAL EXAMINATIONS OF SEAMEN MADE BY MEDICAL OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE YEAR ENDED JUNE 30, 1894.

Summary of examinations and causes of rejection.	Total.	Pilots.	Revenue marine.	Merchant marine.	Life-Saving Service.
Summary of examinations:					
Total number examined.....	2,018	628	220	94	1,076
Number passed.....	1,944	602	199	89	1,054
Number rejected.....	74	26	21	5	22
Causes of rejection:					
Rheumatism.....				1	1
Tubercle of lung.....			1		2
Phthisis pulmonalis.....				1	2
Disease of spine.....				1	1
Myopia.....		3	3		
Color-blindness.....		7	1	2	5
Deafness.....			1		1
Disease of heart—					
Valvular.....			5		
Hypertrophy.....		2	3		
Varicose veins of leg.....					5
Bronchitis, acute.....		1			
Hernia—					
Inguinal.....		2			1
Oblique.....			5		
Diarrhœa, chronic.....		1			
Fistula in ano.....			1		
Varicocele.....			1		1
Hydrocele of tunica vaginalis.....					2
Amputation.....					1

TABLE IV.—STATEMENTS, BY DISTRICTS, OF THE NUMBER OF PATIENTS TREATED DURING THE YEAR ENDED JUNE 30, 1894.

Districts.	Total.	Pa- tients in hos- pital July 1, 1893.	Ad- mitted during the year.	Total num- ber treated in hos- pital.	Discharged.	Died.	Pa- tients in hos- pital June 30, 1894.	Number of days hospital relief was fur- nished.	Num- ber of seamen fur- nished office relief.
Grand total.....	52,803	865	12,860	13,725	12,407	448	870	389,136	39,078
North Atlantic.....	6,322	85	1,816	1,901	1,751	43	107	49,098	4,421
Middle Atlantic.....	6,813	138	1,850	1,988	1,759	83	146	58,912	4,825
South Atlantic.....	8,426	137	1,810	1,947	1,745	78	124	67,412	6,479
The Gulf.....	5,283	67	1,314	1,381	1,276	33	72	30,562	3,902
The Ohio.....	4,576	80	1,075	1,155	1,078	29	50	26,428	3,421
The Mississippi.....	4,310	56	1,272	1,328	1,204	53	71	28,574	2,932
The Great Lakes.....	11,551	156	2,326	2,482	2,240	67	175	70,301	9,069
The Pacific.....	5,412	145	1,368	1,513	1,333	56	124	66,935	3,899
The quarantine stations.....	110	1	29	30	23	6	1	314	80

TABLE V.—RATIO OF PATIENTS TREATED IN HOSPITALS IN EACH DISTRICT.

Districts.	Per cent of total number of patients.	Districts.	Per cent of total number of patients.
North Atlantic.....	30.00	The Mississippi.....	30.81
Middle Atlantic.....	29.17	The Great Lakes.....	21.48
South Atlantic.....	23.10	The Pacific.....	27.95
The Gulf.....	26.14	The quarantine stations.....	27.27
The Ohio.....	23.05		

TABLE VI.—AVERAGE DURATION OF TREATMENT IN HOSPITAL IN EACH DISTRICT.

Districts.	Average number of days relief furnished to each patient.	Districts.	Average number of days relief furnished to each patient.
North Atlantic.....	26.14	The Mississippi.....	21.51
Middle Atlantic.....	24.60	The Great Lakes.....	28.32
South Atlantic.....	29.48	The Pacific.....	43.57
The Gulf.....	22.13	The quarantine stations.....	14.66
The Ohio.....	22.80		

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Grand total of all cases.....	865	12,860	7,832	4,215	360	448	870	39,078	52,803
GENERAL DISEASES.....	365	5,869	3,507	2,032	155	214	326	17,855	24,089
LOCAL DISEASES.....	363	5,181	2,994	1,737	174	213	426	18,070	23,614
POISONS AND POISONED WOUNDS.....	.....	12	8	3	.....	.....	1	20	32
INJURIES AND AMPUTATIONS.....	137	1,798	1,323	443	31	21	117	3,133	5,068

## NORTH ATLANTIC.

TOTAL CASES.....	85	1,816	1,015	704	32	43	107	4,421	6,322
General Diseases.....	26	733	391	296	13	20	39	1,807	2,566
Cowpox.....	.....	.....	.....	.....	.....	.....	.....	38	38
Chicken pox.....	.....	.....	.....	.....	.....	.....	.....	1	1
Measles.....	.....	6	6	.....	.....	.....	.....	2	8
Scarlet fever.....	.....	1	1	.....	.....	.....	.....	.....	1
Influenza.....	.....	77	64	12	.....	1	.....	67	144
Whooping cough.....	.....	.....	.....	.....	.....	.....	.....	1	1
Mumps.....	.....	5	4	.....	.....	.....	.....	4	9
Simple continued fever.....	.....	2	2	.....	.....	.....	.....	1	3
Enteric fever.....	3	32	28	.....	.....	3	4	7	42
Sporadic cholera.....	.....	1	1	.....	.....	.....	.....	.....	1
Dysentery.....	.....	11	8	2	.....	1	.....	8	19
Malarial intermittent fever.....	3	104	95	10	.....	2	128	235	235
Malarial remittent fever.....	2	17	18	.....	.....	1	4	23	23
Malarial cachexia.....	1	12	6	5	.....	2	14	27	27
Beri beri.....	.....	2	1	1	.....	.....	.....	1	3
Erysipelas, simple.....	.....	3	3	.....	.....	.....	.....	3	6
Pyæmia.....	.....	.....	.....	.....	.....	.....	.....	1	1
Syphilis:	.....	.....	.....	.....	.....	.....	.....	.....	.....
Primary.....	.....	5	2	3	.....	.....	.....	11	16
Secondary.....	4	76	4	67	3	.....	6	258	338
Gonorrhœa.....	4	52	26	25	1	.....	4	564	620
Animal parasites.....	.....	4	2	2	.....	.....	.....	1	5
Vegetable parasites.....	.....	.....	.....	.....	.....	.....	.....	1	1
Effects of excessive venery.....	.....	.....	.....	.....	.....	.....	.....	1	1
Scurvy.....	.....	2	.....	2	.....	.....	.....	.....	2
Alcoholism.....	.....	14	14	.....	.....	.....	.....	13	27
Delirium tremens.....	.....	1	1	.....	.....	.....	.....	.....	1
Debility.....	1	7	4	4	.....	.....	.....	112	120
Rheumatic fever.....	.....	32	18	10	.....	.....	4	16	48
Rheumatism.....	5	175	73	99	2	.....	6	455	635
Gout.....	.....	.....	.....	.....	.....	.....	.....	1	1
Osteo-arthritis.....	.....	4	1	1	.....	.....	2	.....	4
Cysts.....	.....	1	.....	.....	.....	.....	1	2	3
Nonmalignant new growth.....	.....	7	4	1	.....	.....	2	24	31
Malignant new growth.....	.....	4	1	.....	1	2	.....	.....	4



TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

NORTH ATLANTIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.				Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.	Died.			
Local Diseases—Continued.									
DISEASES OF THE CIRCULATORY SYSTEM	5	61	1	52	1	2	10	30	96
Pericarditis		2	1	1				1	3
Valvular disease:									
Aortic	2	31		27			6	2	35
Mitral	1	8		9				10	19
Pulmonic		2		1			1		2
Hypertrophy of heart		3		2			1		3
Aneurism of heart		2		1			1		2
Palpitation and irregular action of heart		2		2				8	10
Aneurism of arteries	2	8		7	1	1	1	2	12
Rupture of arteries		1				1			1
Varix		2		2				7	9
DISEASES OF THE RESPIRATORY SYSTEM	3	130	74	46	1	7	5	468	601
Laryngitis:									
Acute		1	1					12	13
Chronic								4	4
Aphonia								1	1
Bronchitis:									
Acute	2	37	31	8				321	360
Chronic		13	4	8		1		72	85
Catarrhal		3	2	1				2	5
Dilatation of bronchii		1		1					1
Spasmodic asthma		10	1	9				19	29
Passive congestion of lung								1	1
Hæmorrhage of lung		4	3	1				1	5
Pneumonia		36	20	8		5	3	3	39
Pneumonic phthisis, chronic		2		2				2	4
Pleurisy:									
Acute		16	7	5	1	1	2	19	35
Chronic	1	6	4	3				8	15
Empyema		1	1						1
Adhesions of pleura								3	3
DISEASES OF THE DIGESTIVE SYSTEM	5	165	104	58	2	4	2	571	741
Stomatitis								3	3
Ulcerative stomatitis								2	2
Noma								1	1
Inflammation of the dental pulp								1	1
Ulceration of the dental pulp								2	2
Caries of dentine and cementum								14	14
Inflammation of dental periosteum								1	1
Abscess of dental periosteum								1	1
Caries of the alveoli		1		1				1	2
Toothache								9	9
Necrosis of alveoli		1	1					8	9
Hypertrophy of tonsils		1	1					3	4
Elongated uvula								1	1
Sore throat	1	1	2					39	41
Quinsy		6	5	1				2	8
Follicular tonsillitis	1	10	10				1	23	34
Ulceration of fauces								1	1
Follicular inflammation of the pharynx		11	7	4				22	33
Post-pharyngeal abscess		1	1						1
Inflammation of the stomach		8	4	3	1			5	13
Ulceration of the stomach		2	2						2
Dyspepsia		21	7	12	1	1		144	165
Gastrodynia		1	1						1
Inflammation of the intestines:									
Catarrhal	2	3	3	2				1	6
Ulcerative		9	8	1				5	14
Ulcer of the intestines								1	1
Hernia		10	5	4		1		54	64
Diarrhœa	1	34	23	11		1		107	142
Constipation		1	1					62	63



TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

NORTH ATLANTIC—Continued.

Diseases.	Remaining under treatment from previous year.	Admitted during the year.	Number of cases.				Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.	
			Discharged.			Died.				
			Recovered.	Improved.	Not improved.					
Local Diseases—Continued.										
DISEASES OF THE DIGESTIVE SYSTEM—Continued.										
Colic.....		2	1	1				5		
Hæmorrhage of the rectum.....		2	1	2						
Ulceration of the rectum.....		1					1			
Piles:										
Internal.....		8	3	5				10		
External.....		9	3	6				27		
Prolapsus of the rectum.....		1	1					2		
Fistula in ano.....		1	1					1		
Fissure of the anus.....		1	1							
Pruritus ani.....								1		
Congestion of the liver.....		6	3	3						
Hepatitis.....								3		
Cirrhosis of liver.....		1		1				1		
Jaundice.....		6	5	1				4		
Inflammation of hepatic ducts and gall bladder.....		1	1					1		
Gallstones.....								1		
Biliary colic.....								1		
Ascites.....		1	1							
Peritonitis.....		3	2			1		1		
DISEASES OF THE LYMPHATIC SYSTEM.....	2	65	47	16	2		2	49	116	
Hypertrophy of lymph-glands.....		1	1					7		
Inflammation of lymph-vessels.....								1		
Inflammation of lymph-glands.....	1	40	27	10	2		2	30	71	
Suppuration of lymph-glands.....	1	24	19	6				11	36	
DISEASES OF THE THYROID BODY.....	1			1				2	3	
Inflammation.....	1			1				1	2	
Goitre.....								1	1	
DISEASES OF THE SUPRARENAL CAPSULES.....	1			1					1	
Addison's disease.....	1			1					1	
DISEASES OF THE URINARY SYSTEM.....		28	8	15		4	1	60	88	
Acute nephritis.....		4	2	2				3	7	
Bright's disease.....		15		10		4	1	5	20	
Nephralgia.....		1	1						1	
Diabetes insipidus.....		1		1					1	
Hæmaturia.....								1	1	
Lithuria.....								2	2	
Inflammation of bladder:										
Acute.....		3	2	1				22	25	
Subacute.....								3	3	
Chronic.....		2	2					13	15	
Irritability of bladder.....		2	1	1				2	4	
Retention of urine.....								1	1	
Incontinence of urine.....								8	8	
DISEASES OF THE GENERATIVE SYSTEM.....	8	152	84	65	3	1	7	300	460	
Urethritis.....		2	2					16	18	
Gleet.....								9	9	
Urinary abscess.....								1	1	
Ulcer of the urethra.....		1					1		1	
Stricture of urethra, organic.....	4	54	16	38		1	3	77	135	
Urinary fistula.....		2		2					2	
Hypertrophy of prostate gland.....		1				1		2	8	
Acute inflammation of prostate gland.....		1	1						1	
Chronic inflammation of prostate gland.....								2	2	
Inflammation of glans penis.....		1	1					13	14	
Ulcer of penis.....	4	51	42	11			2	117	173	
Phimosis.....		2	1	1				1	3	
Inflammation of the scrotum.....								1	1	
Abscess of the scrotum.....		1	1						1	

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

## NORTH ATLANTIC—Continued.

Diseases.	Number of cases.									
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.	
			Recovered.	Improved.	Not improved.					
Local Diseases—Continued.										
DISEASES OF THE GENERATIVE SYSTEM—Continued.										
Inflammation of spermatic cord.....								1	1	
Varicocele.....								11	11	
Hydrocele of tunica vaginalis.....		2	1	1				15	17	
Orchitis:										
Acute.....		10	4	6				13	23	
Chronic.....		1		1				2	3	
Epididymitis.....		19	13	5		1		12	31	
Spermatorrhœa.....		4	2		2			7	11	
DISEASES OF THE ORGANS OF LOCOMOTION	2	32	17	15	1	1	24	58	68	
Periostitis.....		1		1			1	2	2	
Caries.....		1		1			1	2	2	
Necrosis.....		6	4		1	1	4	10	10	
Synovitis:										
Acute.....	2	9	6	5			1	12	12	
Chronic.....		3	1	2			2	5	5	
Ankylosis.....		3	1	2				3	3	
Dislocation of articular cartilage.....		1	1					1	1	
Relaxation of ligaments.....		1	1				1	2	2	
Atrophy of muscles.....		1	1					1	1	
Inflammation of tendons.....							3	3	3	
Inflamed bursa.....		3	1	2			8	11	11	
Bursal abscess.....		1		1				1	1	
Thecal abscess.....		1	1				2	3	3	
Bunion.....		1		1			1	2	2	
DISEASES OF THE CONNECTIVE TISSUE.....	6	22	24	2	1	1	64	92	92	
Edema.....							1	1	1	
Inflammation.....		3	2				1	23	26	
Abscess.....	6	19	22	2	1		40	65	65	
DISEASES OF THE SKIN.....	5	80	52	27	1	5	293	378	378	
Erythema.....		2	2				6	8	8	
Urticaria.....							5	5	5	
Eczema.....	1	6	4	2		1	50	57	57	
Impetigo.....		1	1				1	2	2	
Rupia.....							1	1	1	
Ecthyma.....							1	1	1	
Pityriasis.....							1	1	1	
Lichen.....		1		1				1	1	
Psoriasis.....		1		1			5	6	6	
Herpes.....		2	1	1			17	19	19	
Zona.....		2	2				3	5	5	
Acne.....							6	6	6	
Gutta serena.....							1	1	1	
Sycosis.....							2	2	2	
Alopecia.....							1	1	1	
Frostbite.....	1	6	4	3			13	20	20	
Ulcer.....	1	26	12	12		3	75	102	102	
Fissures.....							3	3	3	
Boil.....	1	19	17	2		1	56	76	76	
Carbuncle.....		5	4	1			5	10	10	
Gangrene.....	1			1			4	5	5	
Whitlow.....		7	5	2			26	33	33	
Onychia.....							1	1	1	
Corn.....		1		1			1	2	2	
Wen.....							6	6	6	
Pruritis.....		1			1		2	3	3	
Hyperidrosis.....							1	1	1	
PARASITIC DISEASES OF THE SKIN.....		11	6	5			52	63	63	
Ringworm.....		1	1				10	11	11	
Favus.....							2	2	2	
Tinea versicolor.....							1	1	1	

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

NORTH ATLANTIC—Continued.

Diseases.	Number of cases.									
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.	
			Recovered.	Improved.	Not improved.					
Local Diseases—Continued.										
PARASITIC DISEASES OF THE SKIN—Cont'd.										
Itch.....		10	5	5				36		
Phthiriasis.....								1		
Unclassified.....								2		
Poisons.....										
Potash.....								1		
Vegetable poisons.....								2		
Injuries.....										
	11	251	176	65	3	1	17	468	736	
GENERAL INJURIES.....										
Burns and scalds.....	1	10	10	1				45	56	
Effects of cold.....	1	5	5	1				15	21	
Multiple injury.....		1	1					28	28	
		4	4					2	6	
LOCAL INJURIES.....										
Strain of muscles.....	10	241	166	64	3	1	17	423	674	
Rupture of muscles.....	1	1	1	1				22	24	
Bruise of muscles.....		1	1					1	2	
Rupture of tendons.....		2	1	1				4	2	
Abrasion.....								4	4	
Foreign body in subcutaneous tissue.....								2	2	
Scalp wound:										
Bone not exposed.....		3	1	2				9	12	
Bone exposed.....		2	2					5	7	
Fracture of the vault of the skull.....		2	1			1		3	2	
Concussion of brain.....		2	2					5	8	
Contusion of face.....		5	4				1	3	8	
Wound of face and mouth.....		9	7	2				10	19	
Fracture of facial bones.....		6	4	1			1	1	7	
Contusion of the eye.....		1	1					3	3	
Foreign body in cornea or conjunctiva.....								2	2	
Wound of eyelid.....								1	1	
Wound of the cornea.....		1	1					1	1	
Contusion of pinna.....								2	2	
Rupture of membrana tympani.....		1	1					2	3	
Contusion of the chest.....		3	3					15	18	
Fracture of the ribs.....		11	6	4			1	7	19	
Wound of parietes of chest.....	1	1	1					1	1	
Contusion of back.....		18	14	4				19	34	
Sprain of back.....		4	3	1				11	15	
Wound of back.....		1	1					1	2	
Concussion of cord.....		1	1					1	1	
Contusion of abdomen.....		3	2	1				3	6	
Contusion of the urethra, perineum, scrotum, and penis.....								1	1	
Contusion of upper extremities.....	1	21	13	8	1			31	58	
Sprain of the shoulder.....								3	3	
Sprain of the elbow.....								6	6	
Sprain of the wrist.....		5	3	2				21	26	
Sprain of the fingers.....								2	2	
Wound of the upper extremities.....	1	40	30	9			2	187	178	
Fracture of the clavicle.....		2	1	1				2	2	
Fracture of the scapula.....								2	2	
Fracture of the humerus.....		3	1				1	8	8	
Fracture of the radius.....		2	1	1				3	3	
Fracture of both bones of forearm.....		1			1			1	1	
Fracture of carpus, metacarpus, and phalanges.....		4	2	1			1	4	8	
Dislocation of the clavicle.....		3		3				2	5	
Dislocation of the humerus.....		5	4	1				4	9	
Dislocation of the ulna.....								1	1	
Dislocation of the radius and ulna.....	1	1	1	1				3	3	
Dislocation of the metacarpus.....								1	1	

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

## NORTH ATLANTIC—Continued.

Diseases.	Remaining under treatment from previous year.	Admitted during the year.	Number of cases.						Number treated in hospital and dispensary.	
			Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.		
			Recovered.	Improved.	Not improved.					
Injuries—Continued.										
LOCAL INJURIES—Continued.										
Dislocation of the phalanges of thumb.		1		1						1
Dislocation of the phalanges of fingers.									2	2
Contusion of the lower extremities.	1	17	14	4					40	58
Sprain of the hip.									1	1
Sprain of the knee.		2	1	1					6	8
Sprain of the ankle.	1	16	12	2			3		17	34
Sprain of the foot.									1	1
Wound of the lower extremities.	1	12	10	2			1		13	26
Fracture of femur.		3	1	1			1		1	4
Fracture of cervix femoris.		2	1				1			2
Fracture of patella.		1			1					1
Fracture of leg, both bones.	2	5	4	2						9
Fracture of tibia alone.		8	4	3			1		2	8
Fracture of fibula alone.		5	2	2			1		2	7
Fracture of phalanges of toes.		1	1							1
Dislocation of the femur at the hip.		1	1							1
Dislocation of the knee.		1					1			1
Dislocation of the foot at the ankle.									1	1
Dislocation of the metatarsus and phalanges.		1	1							1

## MIDDLE ATLANTIC.

TOTAL CASES.	138	1,850	1,145	532	82	83	146	4,825	6,813
General Diseases.	60	859	528	255	36	36	64	2,171	3,090
Smallpox.		2	2					3	5
Chicken-pox.								1	1
Measles.	1	4	5						5
Epidemic rose rash.								1	1
Scarlet fever.		1	1						1
Influenza.		46	38	8				23	69
Mumps.		4	4					7	11
Diphtheria.		2	2						2
Enteric fever.	4	43	39			7	1		47
Typho-malarial fever.		1				1			1
Dysentery.		10	7	1		2		23	33
Malarial intermittent fever.	8	211	194	11	2	3	9	341	569
Malarial remittent fever.	1	16	15	1			1	9	26
Malarial cachexia.	1	24	17	7	1			38	63
Phagedæna.	1	1	1	1					2
Erysipelas:									
Simple.		3	3					1	4
Phlegmonous.		4	3			1			4
Syphilis:									
Primary.	2	12	5	7			2	12	26
Secondary.	6	92	16	66	6	1	9	504	602
Gonorrhœa.	4	32	12	20	1		3	568	604
Fissure of urethra.		2		1	1				2
Animal parasites.		5	3	2				3	8
Scurvy.		1	1						2
Alcoholism.		19	14	4	1			20	39
Debility.		3	1	1			1	65	63
Rhenmatic fever.	5	28	20	10		1	2	3	36
Rheumatism.	15	197	117	78	2	2	13	464	676
Gout.		1		1					1
Osteo-arthritis.	1						1		1
Cysts.		3	2				1	1	4
Nonmalignant new growth.		10	5	4		1		23	33
Malignant new growth.		2				1		1	3
Tubercle.	11	76		29	21	17	20	42	129
Purpura.								3	3
Anæmia.		4	1	3				14	2

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

MIDDLE ATLANTIC—Continued.

Diseases.	Remaining under treatment from previous year.	Admitted during the year.	Number of cases.						Number furnished office relief.	Number treated in hospital and dispensary.
			Discharged.				Died.	Remaining under treatment at close of the year.		
			Recovered.	Improved.	Not improved.					
Local Diseases.....	62	780	465	226	39	42	70	2,256		3,098
DISEASES OF THE NERVOUS SYSTEM.....	9	49	11	27	5	4	11	105		163
Congestion, cerebral.....		1	1							1
Hemorrhage, cerebral.....	2	4		4			2	4		10
Neuritis.....		1			1					1
Sclerosis.....	1		1							1
Progressive muscular atrophy.....	1					1				1
Spastic spinal paralysis.....	1						1			1
Locomotor ataxy.....	2	2		2	1		1	3		7
Paralysis.....		2					2			2
Hemiplegia.....	1	10		4	3	2	2			11
Local paralysis.....		1		1						1
Anesthesia.....		3	1	2				3		6
Eclampsia.....		1								1
Aphasia.....						1				2
Neuralgia.....		5	3	1			1	60		65
Facial.....		4	3	1				17		21
Sciatica.....	1	7	1	7				6		14
Vertigo.....								5		5
Migrain.....		1	1							1
Epilepsy.....		6		4			2	5		11
Hysteria.....		1		1						1
MENTAL DISEASES.....	1	2		1			2			3
Melancholia.....	1	2		1			2			3
DISEASES OF THE EYE.....		13	6	6			1	36		49
Conjunctivitis.....		3	3					23		26
Keratitis.....		2	1	1				1		3
Ulcer of cornea.....		1		1				1		2
Staphyloma.....		1		1						1
Iritis.....		3	1	2				8		11
Ametropia.....								1		1
Night-blindness.....		1	1							1
Blepharitis.....								2		2
Trichiasis.....		1		1						1
Entropion.....		1					1			1
DISEASES OF THE EAR.....		14	8	5	1			25		39
Inflammation of the external meatus, acute.....								1		1
Abscess of the external meatus.....		1	1							1
Inflammation of the middle ear.....		13	7	5	1			19		32
Deafness.....								5		5
DISEASES OF THE NOSE.....		1		1				10		11
Epistaxis.....								2		2
Nasal catarrh.....								5		5
Ulceration.....								2		2
Ozena.....		1		1				1		2
DISEASES OF THE CIRCULATORY SYSTEM.....	6	45	3	31	6	5	6	34		85
Pericarditis.....		1		1				1		2
Valvular disease:										
Aortic.....	1	11		6	4	1	1	2		14
Mitral.....	3	18		13	2	2	4	14		35
Hypertrophy of heart.....		3		3						3
Angina pectoris.....								1		1
Palpitation and irregular action of heart.....	1	7	1	6		1		13		21
Aneurism of arteries.....	1	1	2							2
Phlebitis.....		1				1				1
Varix.....		3		2			1	3		6
DISEASES OF THE RESPIRATORY SYSTEM.....	12	142	81	34	10	24	5	621		776
Laryngitis:										
Acute.....	1	2	3					11		14
Chronic.....	1			1						1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

MIDDLE ATLANTIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE RESPIRATORY SYSTEM—Continued.									
Bronchitis:									
Acute .....	2	43	39	4	—	2	—	528	573
Chronic .....	3	32	12	16	1	3	3	45	80
Spasmodic asthma .....	—	9	2	5	—	2	—	12	21
Hæmorrhage of lung .....	—	—	—	—	—	—	—	1	1
Pneumonia .....	2	21	14	1	—	8	—	—	23
Pneumonic phthisis:									
Acute .....	2	17	—	5	9	4	1	6	25
Chronic .....	—	—	—	—	—	—	—	2	2
Pleurisy:									
Acute .....	—	15	11	—	—	4	—	6	21
Chronic .....	1	3	—	2	—	1	1	10	14
DISEASES OF THE DIGESTIVE SYSTEM.....									
Ulcer of the lips.....	13	146	112	30	3	6	8	596	755
Stomatitis.....	—	1	1	—	—	—	—	2	3
Caries of dentine and cementum.....	—	—	—	—	—	—	—	8	9
Abscess of dental periosteum.....	—	—	—	—	—	—	—	6	6
Ulceration of gums and alveoli.....	1	1	1	1	—	—	—	1	3
Toothache.....	—	—	—	—	—	—	—	3	3
Ulcer of the tongue.....	—	—	—	—	—	—	—	3	3
Sore throat.....	—	—	—	—	—	—	—	1	1
Quinsy.....	—	1	1	—	—	—	—	25	26
Follicular tonsillitis.....	—	6	6	—	—	—	—	—	6
Follicular inflammation of the pharynx.....	—	12	12	—	—	—	—	29	41
Inflammation of the stomach.....	—	3	2	1	—	—	—	17	20
Ulceration of the stomach.....	—	21	15	3	1	1	1	11	32
Dyspepsia.....	—	2	1	1	—	—	—	—	2
Hæmorrhage of the intestines.....	—	8	4	2	1	1	—	163	171
Inflammation of the intestines:	—	1	1	—	—	—	—	—	1
Catarrhal.....	—	1	—	1	—	—	—	—	1
Ulcerative.....	1	2	3	—	—	—	—	4	7
Obstruction of the intestines.....	—	2	2	—	—	—	—	—	2
Hernia.....	1	4	1	2	1	—	1	127	132
Diarrhœa.....	2	41	36	3	—	1	3	105	148
Constipation.....	1	1	1	1	—	—	—	52	54
Ulceration of the rectum.....	—	1	—	1	—	—	—	—	1
Ulceration of the anus.....	—	5	1	4	—	—	—	7	12
Piles, internal.....	1	5	3	3	—	—	—	22	28
Prolapsus of the rectum.....	1	2	1	—	—	1	1	—	3
Stricture of the rectum.....	—	1	—	—	—	—	1	—	1
Fistula in ano.....	2	3	4	1	—	—	—	3	8
Atrophy of the liver.....	—	1	—	—	—	—	—	—	1
Congestion of the liver.....	1	1	—	1	—	—	1	3	5
Hepatitis.....	—	3	2	1	—	—	—	—	3
Perihepatitis.....	—	1	1	—	—	—	—	—	1
Cirrhosis of liver.....	1	2	2	—	—	1	—	—	3
Jaundice.....	1	10	9	2	—	—	—	4	15
Ascites.....	—	1	—	—	—	1	—	—	1
Peritonitis.....	—	2	2	—	—	—	—	—	2
DISEASES OF THE LYMPHATIC SYSTEM.....									
Inflammation of lymph-vessels.....	3	100	67	24	4	—	8	114	217
Suppuration of lymph-vessels.....	3	53	37	14	1	—	4	101	157
	—	47	30	10	3	—	4	13	60
DISEASES OF THE URINARY SYSTEM.....									
Congestion of kidney.....	4	26	11	11	3	3	2	43	73
Acute nephritis.....	1	1	1	1	—	—	—	1	3
Bright's disease.....	—	13	6	5	1	1	—	4	17
Movable kidney.....	3	7	—	5	1	2	2	6	16
Calculus in kidney.....	—	—	—	—	—	—	—	1	1
Hæmaturia.....	—	1	1	—	—	—	—	3	3
Hæmorrhage of bladder.....	—	1	1	—	—	—	—	2	3

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

## MIDDLE ATLANTIC—Continued.

Diseases.	Number of cases.									
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.	
			Recovered.	Improved.	Not improved.					
Local Diseases—Continued.										
DISEASES OF THE URINARY SYSTEM—Continued.										
Inflammation of bladder:										
Acute.....		1	1					19		
Subacute.....								1		
Chronic.....		1			1			5		
Incontinence of urine.....		1	1					1		
DISEASES OF THE GENERATIVE SYSTEM.....										
Urethritis.....	3	109	76	28	3		5	335		
Gleet.....		3	2	1				8		
Stricture of urethra, organic.....		1		1				4		
Urinary fistula.....		20	10	9			1	56		
Extravasation of urine.....		2	1	1						
Impacted calculus of urethra.....								1		
Hypertrophy of prostate gland.....								1		
Acute inflammation of prostate gland.....								3		
Inflammation of glans penis.....		2	2					5		
Ulcer of penis.....	2	42	31	10	1		2	189		
Phimosis.....		6	6							
Paraphimosis.....		2	2					1		
Chordee.....								1		
Varicocele.....		2		2				12		
Hæmatocele of tunica vaginalis.....								1		
Hydrocele of tunica vaginalis.....		6	3	2			1	2		
Orchitis:										
Acute.....		14	13	1				41		
Chronic.....		2			2					
Epididymitis.....	1	7	6	1			1	4		
Spermatorrhœa.....								2		
Impotence.....								2		
Inflammation of the vagina.....								1		
DISEASES OF THE ORGANS OF LOCOMOTION.....										
Periostitis.....	4	21	11	7			7	23		
Necrosis.....		2	1					7		
Synovitis, chronic.....	1	6	4	2			1	7		
Ankylosis.....	1	5	3	1			2	7		
Loose body in joint.....				1						
Psoas, lumbar, and other abscesses.....		1					1	1		
Caries and necrosis of spine.....	1						1			
Atrophy of muscles.....		2		2				1		
Abscess of muscles.....		1					1			
Inflammation of tendon.....								3		
Contraction of tendons and fasciæ.....								1		
Flat-foot.....								2		
Inflamed bursa.....		4	3	1						
Bursal abscess.....										
Bunion.....								1		
DISEASES OF THE CONNECTIVE TISSUE.....										
Oedema.....	2	36	27	4			7	35		
Inflammation.....		2	2							
Abscess.....	1	5	5				1	11		
	1	29	20	4			6	24		
DISEASES OF THE SKIN.....										
Urticaria.....	5	74	52	16	3		8	244		
Eczema.....		6	3	2	1			2		
Pityriasis.....		1	1					54		
Psoriasis.....										
Miliaria.....		1					1	4		
Herpes.....		1	1							
Zona.....								6		
Pemphigus.....								6		
Acne.....								1		
Frostbite.....	1	4	4	1				4		

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

## MIDDLE ATLANTIC—Continued.

Diseases.	Number of cases.								Number treated in hospital and dispensary.	
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.		
			Recovered.	Improved.	Not improved.					
Local Diseases—Continued.										
DISEASES OF THE SKIN—Continued.										
Ulcer.....	3	47	30	11	1	7	88	137		
Boil.....	1	5	6				56	62		
Carbuncle.....	1	4	4	1			7	12		
Whitlow.....		2	2				11	13		
Onychia.....		3	1	1	1		2	5		
PARASITIC DISEASES OF THE SKIN.....										
Ringworm.....		2		1	1		35	37		
Itch.....		1		1			2	3		
Phthiriasis.....							32	32		
Unclassified.....		1			1		1	1		
Poisons.....										
Metals and their salts.....							7	7		
Vegetable poisons.....							2	2		
Poisonous gases and vapors.....							3	3		
POISONED WOUNDS.....										
Venomous animals.....		2	1	1				2		
		2	1	1				2		
Injuries.....										
	16	209	151	50	7	5	12	391		
GENERAL INJURIES.....										
Burns and scalds.....	1	16	10	4	1	1	1	34		
Effects of cold.....	1	13	7	4	1	1	1	31		
Heat stroke.....		1	1				1	2		
		2	2				2	4		
LOCAL INJURIES.....										
Compression of nerves.....	15	193	141	46	6	4	11	357		
Division of nerve.....		1		1				1		
Wound of glands.....				1			10	10		
Strain of muscles.....							1	1		
Rupture of muscles.....		1	1					1		
Strain of tendons.....							1	1		
Abrasion of skin.....		1	1				5	6		
Contusion of scalp.....		2	2				4	6		
Scalp wound:										
Bone not exposed.....		9	8	1			9	18		
Bone exposed.....	1	1	1				1	2		
Contusion of skull.....		1	1					1		
Fracture of the vault of the skull.....		1				1		1		
Contusion of face.....	1	1	2				13	15		
Wound of face and mouth.....		5	5				5	10		
Fracture of facial bones.....		5	4			1	3	8		
Contusion of the eye.....		1					2	2		
Foreign body in cornea or conjunctiva.....							2	2		
Wound of neck.....		1	1				1	2		
Contusion of the chest.....		10	5	4		1	11	21		
Fracture of the ribs.....	1	6	5	1		1	7	14		
Contusion of back.....	1	7	6	2			17	25		
Sprain of back.....	1	7	6				6	13		
Contusion of cord.....		1				1		1		
Contusion of abdomen.....		1	1				3	4		
Wound of the urethra, perineum, scrotum, and penis.....							1	1		
Contusion of upper extremities.....	1	17	11	6		1	40	58		
Sprain of the shoulder.....		6	3	3			3	9		
Sprain of the elbow.....							3	3		
Sprain of the wrist.....	1	3	1	3			15	19		
Sprain of the fingers.....		1	1				1	2		
Wound of the upper extremities.....		12	8	3	1		91	103		
Fracture of the clavicle.....		4	3		1		2	6		
Fracture of the humerus.....		3	1		1	1		3		
Fracture of the radius.....		3	1	2			3	6		



TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

## MIDDLE ATLANTIC—Continued.

Diseases.	Number of cases.									
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.	
			Recovered.	Improved.	Not improved.					
Injuries—Continued.										
LOCAL INJURIES—Continued.										
Fracture of the ulna.....		1	1					2	3	
Fracture of both bones of forearm.....	1	6	3	3			1	2	9	
Fracture of carpus, metacarpus, and phalanges.....		6	4	1	1			3	9	
Dislocation of the scapula.....		1			1				1	
Dislocation of the humerus.....		3	2		1				4	
Dislocation of the radius and ulna.....								1	1	
Contusion of the lower extremities.....	3	21	17	4		1	2	24	45	
Sprain of the hip.....		1	1						1	
Sprain of the knee.....		13	9	4			11		24	
Sprain of the ankle.....		10	9	1			12		22	
Wound of the lower extremities.....	2	11	10	3			36		49	
Fracture of femur.....	1	3	1	2		1			4	
Fracture of patella.....							1		1	
Fracture of leg, both bones.....		4	3				1		4	
Fracture of tibia alone.....		2	2						2	
Fracture of fibula alone.....	1	2		2			1	2	5	
Fracture of tarsus.....	1		1						1	
Dislocation of the knee.....								1	1	

## SOUTH ATLANTIC.

<b>TOTAL CASES.....</b>	<b>137</b>	<b>1,810</b>	<b>1,162</b>	<b>539</b>	<b>44</b>	<b>78</b>	<b>124</b>	<b>6,479</b>	<b>8,426</b>
<b>General Diseases.....</b>	<b>56</b>	<b>951</b>	<b>628</b>	<b>272</b>	<b>18</b>	<b>43</b>	<b>46</b>	<b>3,215</b>	<b>4,222</b>
Cowpox.....								76	76
Measles.....	2	3	5					2	7
Epidemic rose rash.....		1	1						1
Influenza.....		80	56	22		2		247	327
Mumps.....		3	3					9	12
Diphtheria.....		1	1					1	1
Simple continued fever.....		2	2					1	3
Enteric fever.....	3	26	18	1		6	4	1	30
Typho-malarial fever.....		1				1			1
Yellow fever.....		1	1						1
Sporadic cholera.....	1	1	1						4
Dysentery.....	5	36	27	7	1	3	3	66	107
Malarial intermittent fever.....	10	274	269	9	1		5	785	1,069
Malarial remittent fever.....	4	123	103	13	1	9	1	61	188
Malarial cachexia.....		5	2	3				73	78
Beri-beri.....		1		1					1
Erysipelas:									
Simple.....		4	3	1				10	14
Phlegmonous.....		1		1					1
Syphilis:									
Primary.....	1	22	8	14	1			76	90
Secondary.....	8	124	4	110		3	15	273	405
Gonorrhoea.....	2	38	25	11			4	788	828
Animal parasites.....		1		1				6	7
Effects of excessive venery.....								2	2
Surfeit.....								1	1
Scurvy.....								2	2
Alcoholism.....	1	6	6				1	2	9
Delirium tremens.....		1	1						1
Malposition of testicles.....		1		1					1
Debility.....	1	6	4	3				52	59
Rheumatic fever.....	3	30	17	16				16	49
Rheumatism.....	7	100	66	29	7	2	3	529	636
Gout.....									2
Osteo-arthritis.....		2	1	1				1	3
Nonmalignant new growth.....		2	2					17	19

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

## SOUTH ATLANTIC—Continued.

Diseases.	Number of cases.									
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.				Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.					
General Diseases—Continued.										
Malignant new growth.....	1	2			1	1	1	1	4	
Tubercle.....	7	49	1	26	6	16	7	88	144	
Scrofula.....		1					1	1	2	
Anæmia.....		3	1	2				25	28	
Local Diseases.....	65	635	362	211	21	33	73	2,924	3,624	
DISEASES OF THE NERVOUS SYSTEM.....										
Congestion, cerebral.....	10	53	28	19	1	2	13	214	277	
Myelitis.....		2	1			1			2	
Neuritis.....	2	1		1			2		3	
Abscess of the brain.....	1	1	1				1	3	5	
Sclerosis.....								2	1	
Locomotor ataxy.....								1	1	
Paralysis.....		2		1			1		2	
Hemiplegia.....	4	3		4			3	2	9	
Paraplegia.....	2	1		1			2	1	4	
Local paralysis.....		2		2				5	7	
Anæsthesia.....								1	1	
Spasm of muscle.....								5	5	
Wry neck.....								3	3	
Hyperæsthesia.....								2	2	
Neuralgia.....		16	14	2				108	124	
Facial.....		2	2					27	29	
Sciatic.....		13	6	4			3	5	18	
Vertigo.....	1	5	3	2			1	7	13	
Megrim.....		1	1					18	19	
Epilepsy.....		3		2	1			23	26	
Hysteria.....								1	1	
MENTAL DISEASES.....										
Hypochondriasis.....	25	2	2		2	2	21	3	30	
Insanity.....								2	2	
Mania.....	11		1				10	1	11	
Melancholia.....	9	1			1	1	8		10	
Dementia.....	3	1	1		1		2		4	
General paralysis of the insane.....	2					1	1		2	
DISEASES OF THE EYE.....										
Conjunctivitis.....	1	10	5	5			1	43	54	
Keratitis.....		3	3					25	28	
Ulcer of cornea.....		4	1	3				2	6	
Iritis.....		1		1				1	2	
Cataract.....	1			1				5	6	
Ametropia.....									1	
Night-blindness.....		1	1					2	2	
Day-blindness.....								1	1	
Amblyopia.....								1	1	
Amaurosis.....								1	1	
Stricture of nasal duct.....								1	1	
Epiphora.....								1	1	
Stye.....								2	2	
DISEASES OF THE EAR.....										
Inflammation of the external meatus, acute.....		3	3					27	30	
Abscess of the external meatus.....								2	2	
Accumulation of wax.....								1	1	
Inflammation of the middle ear.....								8	8	
Ulceration of membrana tympani.....		3	3					7	10	
Deafness.....								3	3	
DISEASES OF THE NOSE.....										
Hypertrophy.....		1		1				60	61	
Epistaxis.....								1	1	
Inflammation.....								3	3	

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

## SOUTH ATLANTIC—Continued.

Diseases.	Number of cases.							Number furnished office relief.	Number treated in hospital and dispensary.
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.		
			Recovered.	Improved.	Not improved.				
<b>Local Diseases—Continued.</b>									
<b>DISEASES OF THE NOSE—Continued.</b>									
Nasal catarrh.....		1		1				48	49
Ulceration.....								4	1
Ozena.....								1	1
<b>DISEASES OF THE CIRCULATORY SYSTEM.</b>									
Hydropicardium.....	2	20	1	10	3	3	5	59	81
Endocarditis.....		1		1				1	1
Valvular disease:								2	3
Aortic.....		1		1				6	7
Mitral.....	1	10		6	1	2	2	23	34
Hypertrophy of heart.....								1	1
Inflammation of heart.....								3	3
Dilatation of heart.....	1					1			1
Cyanosis.....								1	1
Angina pectoris.....		1		1				1	2
Syncope.....								1	1
Palpitation and irregular action of heart.....								7	7
Degeneration of arteries.....		2		1			1		2
Dilatation of arteries.....		4			2		2	12	16
Phlebitis.....		1	1						1
Varix.....								1	1
<b>DISEASES OF THE RESPIRATORY SYSTEM.</b>									
Laryngitis:	4	106	57	34	4	10	5	572	662
Acute.....		2		2				13	15
Catarrhal.....		1	1						1
Bronchitis:									
Acute.....		49	34	12	2		1	473	522
Chronic.....		2		2				49	51
Catarrhal.....		3	1	1			1	19	22
Spasmodic asthma.....		4	1	2		1		6	10
Passive congestion of lung.....		1		1					1
Hæmorrhage of lung.....		3	2			1		4	7
Pneumonia.....		17	10	2		4	1		17
Abscess of lung.....		1		1					1
Pneumonic phthisis:									
Acute.....	1			1					1
Chronic.....	2	13		8	2	4	1	1	16
Emphysema.....								1	1
Plurisy:									
Acute.....		8	6	1			1	5	12
Chronic.....		1	1					1	2
Empyema.....	1	1	1	1					2
<b>DISEASES OF THE DIGESTIVE SYSTEM.</b>									
Ulcer of the lips.....	3	91	60	21	3	5	5	955	1,049
Fissure of the lips.....		1			1			1	1
Stomatitis.....								1	9
Ulcerative stomatitis.....								1	1
Noma.....								1	1
Caries of dentine and cementum.....								23	23
Abscess of dental periosteum.....		1	1					4	5
Inflammation of gums and alveoli.....								4	4
Ulceration of gums and alveoli.....								2	2
Toothache.....								15	15
Inflammation of the tongue.....								2	2
Ulcer of the tongue.....								1	1
Elongated uvula.....								3	3
Sore throat.....		1	1					61	62
Quinsy.....		4	4					2	6
Follicular tonsillitis.....		6	4	2				31	37
Ulceration of fauces.....		1	1						1
Stricture of the fauces.....								1	1
Follicular inflammation of pharynx.....								17	17
Hæmorrhage of the stomach.....		1			1				1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

## SOUTH ATLANTIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE DIGESTIVE SYSTEM—Continued.									
Inflammation of the stomach.....		6	4			2		42	48
Dyspepsia.....		1	1					176	177
Gastrodynia.....		3	3					2	5
Vomiting.....								1	1
Inflammation of the intestines:									
Catarrhal.....		6	5				1	17	23
Ulcerative.....		8	3	4			1	7	15
Obstruction of the intestines.....		1		1					1
Intussusception.....		1				1			1
Hernia.....		3	1	2				77	80
Diarrhoea.....	1	24	20	4		1		175	200
Constipation.....								151	151
Colic.....		3	2	1				34	37
Hæmorrhage of the rectum.....								1	1
Abscess of the rectum.....		1	1						1
Ulceration of the rectum.....								2	2
Piles:									
Internal.....		4	1	2			1	27	31
External.....	1	3	1	3				23	27
Fistula in ano.....		4	3	1				5	9
Pruritus ani.....								4	4
Congestion of the liver.....		1	1					4	5
Hepatitis.....	1						1	12	13
Cirrhosis of liver.....		1					1		1
Abscess of liver.....		1			1			1	2
Lardaceous liver.....		1		1		1		1	1
Jaundice.....		2	2					6	8
Inflammation of hepatic ducts and gall-bladder.....								1	1
Obstruction of hepatic ducts and gall-bladder.....								1	1
Gallstones.....								1	1
Biliary colic.....								7	7
Ascites.....		1		1					1
Peritonitis.....		1	1						1
DISEASES OF THE LYMPHATIC SYSTEM.....	5	66	43	26	1		1	84	155
Hypertrophy of the spleen.....								1	1
Hypertrophy of lymph-glands.....								1	1
Inflammation of lymph-vessels.....		1		1				1	2
Inflammation of lymph-glands.....	4	39	29	13			1	58	101
Suppuration of lymph-glands.....	1	26	14	12	1			23	50
DISEASES OF THE URINARY SYSTEM.....	1	31	10	11	2	7	2	60	92
Congestion of kidney.....								1	1
Acute nephritis.....		8	3	2	1	1	1	4	12
Bright's disease.....	1	10		5	1	4	1	3	14
Pyelitis.....								1	1
Calculus in kidney.....		1					1		1
Calculus in ureter.....		2	2					1	3
Nephralgia.....		1	1					1	2
Diabetes insipidus.....								1	1
Hæmaturia.....								6	6
Lithuria.....								5	5
Phosphuria.....								1	1
Hæmorrhage of bladder.....								1	1
Inflammation of bladder:									
Acute.....		6	3	2		1		16	22
Subacute.....		1		1				13	14
Chronic.....		1		1				2	3
Irritability of bladder.....								1	1
Retention of urine.....								2	2
Incontinence of urine.....		1	1					1	2

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE GENERATIVE SYSTEM . . .	6	130	84	40	2	3	7	328	464
Urethritis . . . . .								10	10
Gleet . . . . .								8	8
Stricture of urethra:									
Organic . . . . .	1	27	5	18		2	3	46	74
Spasmodic . . . . .		1		1				1	2
Impacted calculus of urethra . . . . .		1				1		1	2
Hypertrophy of prostate gland . . . . .		1			1			3	3
Acute inflammation of prostate gland . . . . .		1		1				2	3
Chronic inflammation of prostate gland . . . . .									1
Oedema of the penis . . . . .								1	1
Inflammation of the penis . . . . .								2	2
Inflammation of glans penis . . . . .		1	1					1	1
Abscess of penis . . . . .								7	8
Ulcer of penis . . . . .	3	52	44	8	1		2	180	235
Phimosis . . . . .	1	3	3				1	3	7
Variocoele . . . . .								4	4
Hæmatocoele of tunica vaginalis . . . . .		1	1					1	1
Hydrocele of tunica vaginalis . . . . .		2		2				11	13
Orchitis:									
Acute . . . . .		29	24	4			1	30	59
Chronic . . . . .								3	3
Epididymitis . . . . .	1	6	5	2				6	13
Abscess of testicle . . . . .		3	1	2				3	3
Spermatorrhœa . . . . .		1		1				5	6
Impotence . . . . .								5	5
Displacement and distortion of the uterus . . . . .								1	1
Dysmenorrhœa . . . . .		1		1					1
DISEASES OF THE ORGANS OF LOCOMOTION . . .	3	14	6	8			3	30	47
Ostitis . . . . .	1		1					1	1
Periostitis . . . . .		1	1					5	6
Caries . . . . .		1		1				1	1
Necrosis . . . . .	1	7	2	4			2	3	11
Synovitis:									
Acute . . . . .		2	1	1				5	7
Chronic . . . . .								2	2
Ankylosis . . . . .	1	1	1				1	1	3
Psoas, lumbar, and other abscesses . . . . .		1		1				1	1
Abscess of muscles . . . . .		1		1				5	6
Inflammation of tendons . . . . .				1				3	3
Inflamed bursa . . . . .								4	4
Bunion . . . . .								1	1
Ganglion . . . . .								1	1
DISEASES OF THE CONNECTIVE TISSUE . . .	1	37	21	11	1	1	4	47	85
Oedema . . . . .								1	1
Inflammation . . . . .		6	4				2	7	13
Abscess . . . . .	1	31	17	11	1	1	2	39	71
DISEASES OF THE SKIN . . . . .	4	63	38	22	1		6	373	440
Erythema . . . . .								15	15
Urticaria . . . . .								9	9
Eczema . . . . .		4	1	3				79	83
Intertrigo . . . . .								1	1
Rupia . . . . .		1		1					1
Pityriasis . . . . .		1	1						1
Prurigo . . . . .								1	1
Lichen . . . . .								1	1
Psoriasis . . . . .								3	3
Miliaria . . . . .								3	3
Herpes . . . . .								17	17
Zona . . . . .	1			1				4	5
Pemphigus . . . . .								1	1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued

## SOUTH ATLANTIC—Continued.

Diseases.	Number of cases.									
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.	
			Recovered.	Improved.	Not improved.					
Local Diseases—Continued.										
DISEASES OF THE SKIN—Continued.										
Acne.....								5	5	
Sycosis.....								8	8	
Alopecia.....								2	2	
Chilblain.....								2	2	
Frostbite.....								9	9	
Ulcer.....	1	6	5	1			1	95	121	
Fissures.....	1	25	12	10	1		3	4	4	
Boil.....		12	7	4			1	79	91	
Carbuncle.....		5	5					3	8	
Gangrene.....		2	2					2	2	
Whitlow.....	1	5	3	2			1	22	28	
Onychia.....		1	1					2	3	
Corn.....								3	3	
Wen.....		1	1					3	3	
Pruritus.....								9	9	
PARASITIC DISEASES OF THE SKIN.										
Ringworm.....		8	4	3	1			69	77	
Favus.....								10	10	
Itch.....		5	2	3				1	1	
Phthiriasis.....								39	44	
Unclassified.....		3	2		1			16	16	
								2	5	
Poisons										
		2		2				2	4	
Metals and their salts.....		1		1					1	
Organic substances.....		1		1				1	2	
Poisonous gases and vapors.....								1	1	
POISONED WOUNDS.										
Venomous animals.....								1	1	
								1	1	
Injuries.....	16	222	172	54	5	2	5	337	575	
GENERAL INJURIES.										
Burns and scalds.....		20	13	6		1		27	47	
Effects of cold.....		14	10	4				16	30	
Heat stroke.....								4	4	
Multiple injury.....		5	3	1		1		5	10	
Privation.....		1		1				1	2	
								1	1	
LOCAL INJURIES.										
	16	202	159	48	5	1	5	319	528	
Strain of muscles.....	1	3	4					16	20	
Rupture of tendons.....								1	1	
Abrasion of skin.....								8	8	
Foreign body in subcutaneous tissue.....								1	1	
Contusion of scalp.....		1		1				1	2	
Scalp wound:										
Bone not exposed.....		11	8	3				19	30	
Bone exposed.....		3		2			1		3	
Contusion of skull.....		1		1				1	1	
Fracture of the vault of the skull.....	1		1					1	1	
Contusion of brain.....		1	1						1	
Contusion of face.....		4	4						4	
Wound of face and mouth.....		8	6	2				10	18	
Fracture of facial bones.....		2	1	1				2	4	
Contusion of the eye.....		1	1					2	3	
Foreign body in cornea or conjunctiva.....								5	5	
Wound of eyelid.....								2	2	
Wound of the sclerotic.....		2	1	1					1	
Foreign body in external meatus.....								1	1	
Wound of neck.....								1	1	
Contusion of the chest.....		10	9			1		6	16	
Fracture of the ribs.....		5	3	1			1	2	7	
Wound of parietes of chest.....		2	2							

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

## SOUTH ATLANTIC—Continued.

Diseases.	Number of cases.									
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.				Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.	
			Recovered.	Improved.	Not improved.	Died.				
Injuries—Continued.										
LOCAL INJURIES—Continued.										
Contusion of back.....		2	2					7	9	
Sprain of back.....	1	1	2					4	6	
Contusion of cord.....								1	1	
Contusion of abdomen.....								3	3	
Wound of parietes of abdomen.....		1	1						1	
Contusion of the urethra, perineum, scrotum, and penis.....								2	2	
Wound of the urethra, perineum, scrotum, and penis.....		3	3					2	5	
Fracture and dislocation of pelvis.....		1	1						1	
Contusion of testicle.....		2	2					1	3	
Contusion of upper extremities.....		6	3	3				25	31	
Sprain of the shoulder.....								1	1	
Sprain of the elbow.....								3	3	
Sprain of the wrist.....	1	2	3					12	15	
Sprain of the fingers.....								2	2	
Wound of the upper extremities.....	1	44	33	11	1			101	146	
Wound of joint, upper extremities.....								1	1	
Fracture of the clavicle.....		1	1					2	3	
Fracture of the humerus.....		7	3	1	2		1		7	
Fracture of the radius.....		1					1	2	3	
Fracture of the ulna.....		4	3	1				2	6	
Fracture of both bones of forearm.....	2	7	4	4	1				9	
Fracture of carpus, metacarpus, and phalanges.....		4	2	2				4	8	
Dislocation of the humerus.....		1	1						1	
Dislocation of the carpus.....								1	1	
Contusion of the lower extremities.....	1	14	14	1				23	38	
Sprain of the knee.....		6	4	1	1			4	10	
Sprain of the ankle.....	4	14	17	1				6	24	
Wound of the lower extremities.....		18	9	8		1		22	40	
Fracture of femur.....		1	1						1	
Fracture of patella.....		1		1				1	2	
Fracture of leg, both bones.....	3	4	6	1					7	
Fracture of tibia alone.....	1	3	3	1					4	
Dislocation of the foot at the ankle.....								1	1	

## THE GULF.

TOTAL CASES.....	67	1,314	803	456	17	33	72	3,902	5,283
General Diseases.....	31	671	402	249	9	14	28	1,706	2,408
Influenza.....		37	33	2	1	1		95	132
Mumps.....		1	1					1	2
Simple continued fever.....		1	1					2	3
Enteric fever.....		6	5			1			6
Typho-malarial fever.....	1	1	2						2
Sporadic cholera.....		1							4
Dysentery.....	1	33	27	3		3	1	3	77
Malarial intermittent fever.....	8	195	183	16	1	1	2	353	558
Malarial remittent fever.....	1	45	40				6	31	77
Malarial cachexia.....		7	6	1				62	69
Erysipelas, simple.....	1		1					4	5
Pyæmia.....								1	1
Syphilis:									
Primary.....	2	40	5	32	1		4	47	89
Secondary.....	8	96		91	4	1	8	209	373
Gonorrhœa.....		19	16	3				311	330
Animal parasites.....								4	4
Effects of excessive venery.....								1	1
Scurvy.....		1		1				2	3

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE GULF—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
General Diseases—Continued.									
Alcoholism.....	1	7	6	1		1		4	12
Debility.....	1	4	4			1		13	18
Rheumatic fever.....		13	10	2			1	2	15
Rheumatism.....	5	125	58	69	1		2	384	514
Nonmalignant new growth.....		5	3	2				7	12
Malignant new growth.....		2		1			1	4	6
Tubercle.....	2	29		23	1	5	2	36	67
Scrofula.....		1		1				2	3
Purpura.....		1	1						1
Anæmia.....		1		1				25	26
Local Diseases.....	28	457	262	167	7	17	32	1,842	2,327
DISEASES OF THE NERVOUS SYSTEM.....	1	18	8	8		1	2	90	109
Spinal meningitis.....	1						1		1
Neuritis.....								5	5
Paralysis.....		3		2		1		11	14
Hemiplegia.....		3	1	2					3
Local paralysis.....		1	1						3
Spasm of muscles.....		1		1				6	7
Paralysis agitans.....		1		1					1
Neuralgia.....		3	2	1					35
Facial.....		4	3				1	12	16
Sciatica.....								3	3
Vertigo.....									6
Megrim.....		1	1					11	12
Epilepsy.....		1		1				2	3
MENTAL DISEASES.....	2	2		1		1	2	2	6
Hypochondriasis.....								1	1
Insanity.....	1						1		1
Mania.....	1						1		1
Melancholia.....		1		1				1	2
Dementia.....		1				1			1
DISEASES OF THE EYE.....	3	9	6	4	1		1	53	65
Conjunctivitis.....	1	1	1		1			41	43
Pterygium.....	1	1	1	1				3	5
Keratitis.....								3	3
Iritis.....		3	2	1				5	8
Retinitis.....		1		1					1
Cataract.....	1		1					1	1
Panophthalmitis.....		2	1	1				1	3
Blepharitis.....		1					1		1
DISEASES OF THE EAR.....		6	4	2				27	33
Inflammation of the external meatus, acute.....		1	1					5	6
Abscess of the external meatus.....								6	6
Accumulation of wax.....								6	6
Inflammation of the middle ear.....		5	3	2				9	14
Tinnitus.....								1	1
DISEASES OF THE NOSE.....		1		1				13	14
Inflammation.....								2	2
Nasal catarrh.....								11	11
Necrosis.....		1		1					1
DISEASES OF THE CIRCULATORY SYSTEM.....	1	21	1	18		1	2	60	82
Pericarditis.....		1		1					1
Valvular disease:									
Aortic.....		1		1				8	9
Mitral.....		14		12			2	30	44
Angina pectoris.....								6	6
Palpitation and irregular action of heart.....		1	1					16	17



TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

## THE GULF—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE CIRCULATORY SYSTEM—Continued.									
Degeneration of arteries.....		1		1					1
Aneurism of arteries.....	1	2		2		1			3
Varix.....		1		1					1
DISEASES OF THE RESPIRATORY SYSTEM.									
Laryngitis, chronic.....	1	61	32	16	1	10	3	354	416
Bronchitis:								1	
Acute.....	1	22	16	4	1	1	1	295	318
Chronic.....		4		4				33	37
Catarrhal.....		3	2	1				4	7
Spasmodic asthma.....		5	1	3			1	8	13
Hæmorrhage of lung.....								1	1
Edema of lung.....		1		1				1	1
Pneumonia.....		17	7	1		9		2	19
Pneumonic phthisis, chronic.....								3	3
Pleurisy:									
Acute.....		7	6	1				4	11
Chronic.....		2		1			1	3	5
DISEASES OF THE DIGESTIVE SYSTEM.....									
Ulcer of the lips.....	6	87	66	22		3	2	620	713
Stomatitis.....		1		1				1	2
Ulcerative stomatitis.....								7	7
Cyst of the mouth.....		1	1					1	1
Caries of dentine and cementum.....								15	15
Necrosis of dentine and cementum.....								3	3
Inflammation of dental periosteum.....								2	2
Abscess of dental periosteum.....								1	1
Ulceration of gums and alveoli.....		1		1				1	1
Toothache.....								22	22
Sore throat.....		4	3	1				28	32
Quinsy.....		1	1					2	3
Follicular tonsillitis.....		3	2	1				3	6
Abscess of salivary glands.....								2	2
Salivation.....								1	1
Follicular inflammation of the pharynx.....								11	11
Inflammation of the stomach.....		3		1		2		12	15
Ulceration of the stomach.....		1	1					1	1
Dyspepsia.....	1	3	3	1				76	80
Vomiting.....								1	1
Inflammation of the intestines:									
Catarrhal.....		3	3					3	6
Ulcerative.....								2	2
Abscess in the subperitoneal tissue.....		1	1					1	1
Obstruction of the intestines.....		1	1					1	1
Hernia.....		5	1	4				93	98
Diarrhœa.....	1	31	28	2			2	105	137
Constipation.....		4	3	1				156	160
Colic.....		2	2					30	32
Abscess of the rectum.....		1	1						1
Files:									
Internal.....		1		1				10	11
External.....	1	4	3	2				8	13
Prolapsus of the rectum.....		1		1					1
Fistula in ano.....	2	1	1	2				2	5
Pruritus ani.....								3	3
Hypertrophy of the liver.....								3	3
Congestion of the liver.....		5	5					1	6
Hepatitis.....		2		2				4	6
Cirrhosis of liver.....		1				1		1	2
Jaundice.....		7	6	1				6	13
Inflammation of hepatic ducts and gall-bladder.....								2	2
Gallstones.....								1	1
Adhesion of peritoneum.....								1	1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

## THE GULF—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE LYMPHATIC SYSTEM.	1	43	21	18			5	64	108
Induration and enlargement of spleen from ague.								1	1
Congestion of the spleen.		1	1					1	2
Hypertrophy of lymph-glands.								1	1
Inflammation of lymph-vessels.								1	1
Inflammation of lymph-glands.		27	16	7			4	48	75
Suppuration of lymph-glands.	1	15	4	11			1	12	28
DISEASES OF THE URINARY SYSTEM.		7	3	3			1	50	57
Bright's disease.		3					1	12	15
Nephralgia.		1	1	2					1
Hæmaturia.								2	3
Lithuria.								1	1
Inflammation of bladder:									
Acute.								1	1
Subacute.		1	1					2	3
Chronic.		1		1				13	14
Irritability of bladder.		1	1					19	20
DISEASES OF THE GENERATIVE SYSTEM.	10	98	59	36	3		10	269	377
Urethritis.		1	1					6	7
Gleet.								3	3
Ulcer of the urethra.		1	1					1	1
Stricture of urethra, organic.	1	12	3	8			2	25	38
Urinary fistula.		2	1		1			3	5
Hypertrophy of prostate gland.								1	1
Chronic inflammation of prostate gland.								1	1
Inflammation of the penis.		1		1				1	2
Inflammation of glans penis.								2	2
Abscess of penis.		1	1					1	1
Ulcer of penis.	7	55	34	20	2		6	178	240
Phimosis.		1	1					2	3
Paraphimosis.		1	1					2	3
Inflammation of the scrotum.	1		1					1	1
Abscess of scrotum.								1	1
Varicocele.								5	5
Inflammation of tunica vaginalis.		1		1				1	2
Orchitis:									
Acute.		10	8	1			1	10	20
Chronic.		3	1	2				10	13
Epididymitis.	1	8	6	2			1	10	19
Spermatorrhœa.		1		1				3	4
Impotence.								3	3
Inflammation of the vagina.								1	1
DISEASES OF THE ORGANS OF LOCOMOTION.		5	1	2	1		1	6	11
Ostitis.		1		1				1	1
Necrosis.		1			1			2	3
Synovitis:									
Acute.		2	1	1				1	3
Chronic.								1	1
Caries and necrosis of spine.		1					1		1
Inflamed bursa.								2	2
DISEASES OF THE CONNECTIVE TISSUE.	1	34	22	11			2	53	88
Edema.		1		1					1
Inflammation.	1	7	7	1				7	15
Abscess.		26	15	9			2	46	72
DISEASES OF THE SKIN.	2	61	38	23		1	1	162	225
Erythema.		1		1				2	3
Urticaria.		1	1					6	7
Eczema.		7	2	5				26	33
Intertrigo.								4	4
Ecthyma.		1	1						

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE GULF—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE SKIN—Continued.									
Lichen.....								2	2
Miliaria.....								1	1
Herpes.....		4	3	1				1	5
Zona.....		2	2					2	4
Acne.....								3	3
Chilblain.....								7	7
Frostbite.....		2	1	1					2
Ulcer.....	1	21	14	8				45	67
Boil.....		6	4	2				28	34
Carbuncle.....		6	3	2		1		8	14
Whitlow.....		7	5	1			1	15	22
Onychia.....		1		1					1
Corn.....								1	1
Lupus.....	1	1	1	1					2
Cheloid.....								1	1
Wen.....								5	5
Pruritus.....		1	1					5	6
PARASITIC DISEASES OF THE SKIN.....		4	1	2	1			19	23
Ringworm.....								9	9
Phthiriasis.....		1	1					8	9
Irritation by stinging plants.....								2	2
Unclassified.....		3		2	1				3
Poisons.....		4	2	2				1	5
Metals and their salts.....		1		1					1
Vegetable poisons.....		3	2	1				1	4
Injuries.....	8	182	137	38	1	2	12	353	548
GENERAL INJURIES.....		8	6	1		1		20	28
Burns and scalds.....		6	4	1		1		20	26
Heat-stroke.....		2	2						2
LOCAL INJURIES.....	8	174	131	37	1	1	12	333	515
Strain of muscles.....		5	4				1	16	21
Abrasion of skin.....		1	1					2	3
Foreign body in subcutaneous tissue.....								1	1
Contusion of scalp.....								1	1
Scalp wound:									
Bone not exposed.....		2	2					14	16
Bone exposed.....		3	3					3	6
Fracture of the base of the skull.....		1	1					1	2
Contusion of face.....		3	1	2				3	6
Wound of face and mouth.....		8	5	2			1	6	14
Contusion of the eye.....								1	1
Foreign body in cornea or conjunctiva.....								4	4
Wound of conjunctiva.....		1		1					1
Wound of the sclerotic.....		1	1						1
Contusion of pinna.....								2	2
Rupture of membrana tympani.....								1	1
Contusion of soft parts of neck.....		3		3				1	4
Wound of neck.....		2	1			1			2
Contusion of the chest.....	1	3	3	1				20	24
Fracture of the ribs.....	1	3	2	1			1		4
Wound of parietes of chest.....		3	1	2					3
Contusion of back.....		10	10					16	26
Sprain of back.....		4	4					20	24
Wound of back.....		2	1	1				1	3
Concussion of cord.....		1	1						1
Contusion of abdomen.....		1	1						1
Wound of parietes of abdomen.....		1	1						1
Wound of the urethra, perineum, scrotum, and penis.....		1	1					2	3
Rupture of urethra.....		1	1						1



TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES  
TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

**THE OHIO—Continued.**

Diseases.	Number of cases.								Number treated in hospital and dispensary.
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.				Remaining under treatment at the close of the year.	Number furnished office relief.	
			Recovered.	Improved.	Not improved.	Died.			
Local Diseases .....	33	450	285	145	16	15	22	1,642	2,125
DISEASES OF THE NERVOUS SYSTEM.....	4	17	7	5	4	2	3	114	135
Inflammation of cerebral membranes.		1				1			1
Neuritis.....								3	3
Locomotor ataxy.....	3	3		2			2	12	18
Hemiplegia.....	1	1			1	1		2	4
Paraplegia.....		1			1				1
Local paralysis.....		1		1				1	2
Wry-neck.....								1	1
Hyperaesthesia.....								2	2
Neuralgia.....		3	3					51	54
Facial.....								13	13
Sciatica.....		4	4					9	13
Vertigo.....								6	6
Megrim.....		1		1				13	14
Epilepsy.....		2		1			1		2
Hysteria.....								1	1
MENTAL DISEASE.....								1	1
Hypochondriasis.....								1	1
DISEASES OF THE EYE.....	2	10	7	3	1		1	41	53
Eoehymosis of the conjunctiva.....								1	1
Conjunctivitis.....	1	7	5	2	1			21	29
Ulcer of cornea.....								3	3
Iritis.....	1	2	1	1			1		3
Retinitis.....								5	5
Cataract.....								1	1
Ametropia.....								2	2
Amblyopia.....								1	1
Amaurosis.....								1	1
Squint.....								1	1
Blepharitis.....								3	3
Stye.....								1	1
Abcess of eyelid.....		1	1					1	2
DISEASES OF THE EAR.....		2		2				21	23
Abcess of the external meatus.....								2	2
Sebaceous cyst.....								1	1
Accumulation of wax.....								1	1
Inflammation of the middle ear.....		2		2				16	18
Obstruction of Eustachian tube.....								1	1
DISEASES OF THE NOSE.....		1		1				41	42
Hypertrophy.....								2	2
Inflammation.....		1		1				2	3
Nasal catarrh.....								35	35
Ulceration.....								1	1
Perforation of septum.....								1	1
DISEASES OF THE CIRCULATORY SYSTEM.....	3	12	1	8	1	4	1	30	45
Endocarditis.....								1	1
Valvular disease:									
Aortic.....		1		1				1	2
Mitral.....	2	8		5	1	3	1	11	21
Hypertrophy of heart.....		1		1					1
Dilatation of heart.....								1	1
Palpitation and irregular action of heart.....		1	1					6	7
Aneurism of arteries.....	1	1		1		1		7	9
Phlebitis.....				1			1	1	1
Varix.....								2	2

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE OHIO—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE RESPIRATORY SYSTEM.....	2	101	64	26	1	7	5	220	323
Hay asthma.....								3	8
Laryngitis:									
Acute.....	1	2	1	2				9	12
Chronic.....								3	3
Bronchitis:									
Acute.....	1	29	23	7				142	172
Chronic.....		14	7	5	1		1	39	53
Catarrhal.....		5	3	2				3	8
Spasmodic asthma.....		9	3	5			1	9	18
Pneumonia.....		33	22	4		6	1	1	34
Gangrene of lung.....		1				1			1
Pneumonic phthisis:									
Acute.....								2	2
Chronic.....								1	1
Emphysema.....		1					1		1
Pleurisy:									
Acute.....		6	5				1	7	13
Chronic.....		1		1				1	2
DISEASES OF THE DIGESTIVE SYSTEM.....	1	113	78	31	3	1	3	605	721
Ulcer of the lips.....								3	3
Stomatitis.....								1	1
Caries of dentine and cementum.....								4	4
Inflammation of dental periosteum.....								1	1
Abscess of dental periosteum.....		1	1					3	4
Inflammation of gums and alveoli.....								2	2
Toothache.....								1	1
Inflammation of the tongue.....								1	1
Ulcer of the tongue.....								2	2
Sore throat.....		1	1					10	11
Quinsy.....		2		2				2	4
Follicular tonsillitis.....		14	11	3				33	47
Ulceration of fauces.....		1		1					1
Follicular inflammation of pharynx.....		1		1				57	58
Inflammation of the stomach.....		13	8	5				24	37
Ulceration of the stomach.....		1		1					1
Dyspepsia.....								79	79
Gastrodynia.....								1	1
Vomiting.....								1	1
Inflammation of the intestines:									
Catarrhal.....		19	13	6				27	46
Ulcerative.....		3	3					3	6
Hernia.....	1	5	3	2	1			63	69
Diarrhoea.....	1	22	20	2			1	93	116
Constipation.....		2	2					99	101
Colic.....		1	1					3	4
Abscess of the rectum.....		1	1					1	2
Piles:									
Internal.....		6	4	1			1	15	21
External.....		2	2					17	19
Fistula in ano.....		8	3	3	1		1	1	9
Pruritus ani.....								3	3
Congestion of the liver.....		2	2					22	24
Hepatitis.....		2	1	1				30	32
Cirrhosis of liver.....	1	2		1	1	1		1	4
Jaundice.....		1	1					2	3
Inflammation of hepatic ducts and gall-bladder.....		2	1	1					2
Peritonitis.....		1		1					1
DISEASES OF THE LYMPHATIC SYSTEM.....	6	32	26	8	3		1	39	77
Inflammation of lymph-glands.....	5	19	15	6	2		1	27	51
Suppuration of lymph-glands.....	1	13	11	2	1			12	26





TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE OHIO -Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE SKIN—Continued.									
Psoriasis.....								2	2
Herpes.....		1	1					12	13
Zona.....								2	2
Acne.....								2	2
Sycosis.....								1	1
Alopecia.....								1	1
Frostbite.....		4	3	1				1	5
Ulcer.....	3	9	5	6		1	42		54
Fissures.....							1		1
Boil.....							26		26
Carbuncle.....		2	1	1			7		9
Gangrene.....	1			1					1
Whitlow.....		2	2					3	5
Onychia.....		1		1				6	7
Wen.....	1		1						1
Pruritus.....							2		2
PARASITIC DISEASES OF THE SKIN.....									
Ringworm.....							15		15
Itch.....							3		3
Phthiriasis.....							4		4
							8		8
Poisons.....									
Vegetable poisons.....							1		1
Injuries.....									
	13	114	85	34	1	7	206		333
GENERAL INJURIES.....									
Burns and scalds.....	2	3	4	1			8		13
Heat-stroke.....	2	1	2	1			8		11
		2	2						2
LOCAL INJURIES.....									
Contusion of nerves.....							1		1
Bruise of muscles.....		1		1			1		2
Strain of muscles.....							1		1
Rupture of tendons.....							1		1
Foreign body in subcutaneous tissue.....							1		1
Scalp wound:									
Bone not exposed.....		2	2				12		14
Bone exposed.....		1	1						1
Contusion of face.....		1	1				2		3
Wound of face and mouth.....		2	2				5		7
Fracture of facial bones.....		1				1			1
Foreign body in cornea or conjunctiva.....							7		7
Wound of eyelid.....		1	1				1		2
Foreign body in external meatus.....							1		1
Wound of neck.....							1		1
Contusion of the chest.....		3	2		1		3		6
Fracture of the ribs.....		3	1	2			5		3
Penetrating wound of pleura or lung.....		1	1				1		2
Contusion of back.....	1	1	1	1			4		6
Sprain of back.....		6	6				18		24
Wound of back.....		1		1			1		2
Contusion of upper extremities.....		4	2	2			11		15
Sprain of the shoulder.....							6		6
Sprain of the elbow.....							4		4
Sprain of the wrist.....		1	1				2		3
Sprain of the fingers.....							4		4
Wound of the upper extremities.....	1	15	14	2			2		13
Wound of joint, upper extremities.....							37		37
Fracture of the clavicle.....		1	1						1
Fracture of the scapula.....		1		1					1
Fracture of the humerus.....		1		1					3
Fracture of the radius.....		1		1				2	3



TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

## THE OHIO—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Injuries—Continued.									
LOCAL INJURIES—Continued.									
Fracture of the ulna.....		1	1						1
Fracture of both bones of forearm.....								3	3
Fracture of carpus, metacarpus, and phalanges.....									2
Dislocation of the humerus.....		1	1						1
Dislocation of phalanges of thumb.....									1
Contusion of the lower extremities.....	1	22	16	6		1	15		38
Sprain of the knee.....		4	2	2			5		6
Sprain of the ankle.....	1	12	10	2		1	13		26
Wound of the lower extremities.....	4	16	12	7		1	22		42
Fracture of femur.....		2		1		1			2
Fracture of cervix femoris.....	2		1			1			2
Fracture of leg, both bones.....		2	2					1	3
Fracture of tibia alone.....		2		1		1			2
Fracture of fibula alone.....		1	1						1
Dislocation of the knee.....	1			1					1
Dislocation of the metatarsus and phalanges.....								1	1

## THE MISSISSIPPI.

TOTAL CASES.....	56	1,272	830	341	33	53	71	2,982	4,310
General Diseases.....	28	604	399	178	11	23	21	1,441	2,078
Measles.....		4	4						4
Influenza.....		26	20	4	1	1		67	93
Mumps.....		2	2					1	3
Enteric fever.....	2	3	5						5
Typho-malarial fever.....		2	1			1			2
Dysentery.....		18	12	5		1		28	46
Malarial intermittent fever.....	4	203	187	10	2	3	5	311	518
Malarial remittent fever.....	2	40	34	5		3		51	93
Malarial cachexia.....		17	12	5				64	81
Erysipelas, simple.....		5	5						5
Syphilis:									
Primary.....		11	1	10				21	32
Secondary.....	6	89	9	80	2		4	265	360
Gonorrhoea.....	3	28	19	11	1			268	299
Animal parasites.....								6	6
Alcoholism.....		27	18	5	1	2	1	11	38
Debility.....		7	2	4			1	23	30
Rheumatic fever.....		9	5	2			2		9
Rheumatism.....	3	81	59	19	1	1	4	286	370
Nonmalignant new growth.....		7	3	4				4	11
Malignant new growth.....		1				1			1
Tubercle.....	8	22	1	12	3	10	4	28	53
Scrofula.....		1		1				2	3
Anæmia.....		1		1				5	6
Local Diseases.....	19	514	309	137	17	28	42	1,290	1,823
DISEASES OF THE NERVOUS SYSTEM.....	2	13	3	3		4	5	55	70
Hæmorrhage, cerebral.....		1				1			1
Spinal meningitis.....		2				1	1		2
Myelitis.....		1					1	2	3
Softening of brain or cord.....		1				1			1
Sclerosis.....								1	1
Spastic spinal paralysis.....								2	2
Locomotor ataxy.....		1					1		1
Hemiplegia.....		2		2				1	3
Local paralysis.....	1		1					2	3

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE MISSISSIPPI—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE NERVOUS SYSTEM—Continued.									
Spasm of muscle.....								1	1
Wry-neck.....								3	3
Paralysis agitans.....		1					1	1	2
Neuralgia.....		1					1	22	23
Facial.....		2	2					16	18
Sciatica.....								2	2
Epilepsy.....	1	1		1		1		2	4
MENTAL DISEASES.....									
Mania.....		1		1					1
		1		1					1
DISEASES OF THE EYE.....									
Conjunctivitis.....		12	8	4				23	35
Pterygium.....		6	6					12	18
Iritis.....		1	1					2	3
Panophthalmitis.....		1	1					3	4
Cataract.....		1		1				1	2
Amblyopia.....		2		2				2	2
Amaurosis.....								1	1
Hæmatoma.....								1	1
Abscess of eyelid.....								2	2
Ectropion.....		1		1					1
DISEASES OF THE EAR.....									
Accumulation of wax.....		4	2	2				13	17
Inflammation of the middle ear.....		4	2	2				4	4
Obstruction of Eustachian tube.....								8	12
								1	1
DISEASES OF THE NOSE.....									
Inflammation.....								13	13
Nasal catarrh.....								1	1
								12	12
DISEASES OF THE CIRCULATORY SYSTEM.....									
Pericarditis.....	3	16	1	15		2	1	25	44
Endocarditis.....		1		1		1			1
Valvular disease:									
Aortic.....		4		3			1	3	7
Mitral.....	3	8		10		1		21	32
Angina pectoris.....								1	1
Phlebitis.....		1	1						1
Varix.....		1		1					1
DISEASES OF THE RESPIRATORY SYSTEM.....									
Laryngitis:	2	79	42	21	4	11	3	203	284
Acute.....								2	2
Catarrhal.....								1	1
Bronchitis:									
Acute.....		34	22	8	1		3	146	180
Chronic.....		7	3	4				16	23
Catarrhal.....		2	1	1				11	13
Spasmodic asthma.....	1	4	2	3				18	23
Hæmorrhage of lung.....								1	1
Pneumonia.....		19	11	1		7		3	22
Abscess of lung.....		1				1			1
Cirrhosis of lung.....		1		1					1
Pneumonic phthisis, chronic.....		2			1	1			2
Emphysema.....		4	1	2	1				4
Pleurisy:									
Acute.....		5	2	1	1	1		3	8
Chronic.....	1					1		2	3
DISEASES OF THE DIGESTIVE SYSTEM.....									
Stomatitis.....	3	157	116	18	6	5	15	572	732
Caries of dentine and cementum.....								3	3
								16	3

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES  
TREATED DURING THE YEAR ENDED JUNE 30, 1894.—Continued.

**THE MISSISSIPPI—Continued.**

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dis- pensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE DIGESTIVE SYSTEM—Con- tinued.									
Abscess of dental periosteum.....		1	1					2	3
Inflammation of gums and alveoli.....								2	2
Ulceration of gums and alveoli.....		1	1						1
Toothache.....								2	2
Ulcer of the tongue.....								3	3
Elongated uvula.....								2	2
Sore throat.....								13	13
Quinsy.....								2	2
Follicular tonsillitis.....		7	5	1			1	15	22
Ulceration of fauces.....								1	1
Inflammation of salivary glands.....		1	1					1	2
Salivation.....								1	1
Follicular inflammation of the pharynx.....		2	2					11	13
Ulceration of pharynx.....								1	1
Inflammation of the stomach.....		7	3	1		1	2	24	31
Dyspepsia.....								74	74
Vomiting.....		1	1					1	1
Hæmorrhage of the intestines.....								1	1
Inflammation of the intestines:									
Catarrhal.....	1	52	45	3	1	2	2	86	139
Ulcerative.....		8	5	1		1	1	10	18
Hernia.....		5	3		1		1	64	69
Diarrhoea.....	1	32	25	5	1		2	91	124
Constipation.....								120	120
Colic.....		2	2					3	5
Abscess of the rectum.....		1	1					1	1
Abscess of the anus.....		2	2					1	3
Ulceration of the rectum.....		3	3						3
Piles:									
Internal.....	1	4	2		1		2	3	8
External.....		9	5	2	1		1	10	19
Fistula in ano.....		4	3		1			1	5
Fissure of the anus.....								1	1
Atrophy of the liver.....		1				1			1
Congestion of the liver.....		2	2					3	5
Hepatitis.....		2	1	1					2
Cirrhosis of liver.....		3		2			1		3
Jaundice.....		1					1	1	2
Inflammation of hepatic ducts and gall bladder.....		4	3				1	2	6
Gallstones.....								1	1
Biliary colic.....		1		1				1	2
Ascites.....		1		1					1
DISEASES OF THE LYMPHATIC SYSTEM.....	2	25	17	7	1		2	19	46
Induration and enlargement of spleen from ague.....								1	1
Abscess of the spleen.....		1	1						1
Inflammation of lymph-glands.....		5	3	1			1	9	14
Suppuration of lymph-glands.....	2	19	13	6	1		1	9	30
DISEASES OF THE URINARY SYSTEM.....	2	20	4	11		5	2	39	61
Acute nephritis.....		1		1				2	3
Bright's disease.....	1	13		8		4	2	5	19
Diabetes insipidus.....		1				1			1
Hæmaturia.....		1		1					1
Inflammation of bladder:									
Acute.....	1	4	4	1				10	15
Chronic.....								8	8
Irritability of bladder.....								9	9
Incontinence of urine.....								5	5
DISEASES OF THE GENERATIVE SYSTEM.....	2	94	53	34	3		6	211	307
Urethritis.....								1	1
Gleet.....								1	1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

## THE MISSISSIPPI—Continued.

Diseases.	Number of cases.									
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.	
			Recovered.	Improved.	Not improved.					
Local Diseases—Continued.										
DISEASES OF THE GENERATIVE SYSTEM—Continued.										
Ulcer of the urethra .....									1	1
Stricture of urethra, organic .....	1	24	8	16	1			16		41
Hypertrophy of prostate gland .....								1		1
Inflammation of glans penis .....								1		1
Ulcer of penis .....	1	51	34	14	1		3	165		217
Gangrene of penis .....		1	1							1
Phimosis .....		5	3		1		1	2		7
Paraphimosis .....		1	1							1
Chordee .....								1		1
Abscess of the scrotum .....		1	1					1		2
Inflammation of spermatic cord .....								1		2
Varicocele .....		1		1						2
Hæmatocele of tunica vaginalis .....								2		2
Orchitis, acute .....		3	1	2				9		12
Epididymitis .....		7	4	1			2	5		12
Spermatorrhœa .....								1		1
Impotence .....								2		2
Menorrhagia .....								1		1
DISEASES OF THE ORGANS OF LOCOMOTION										
Ostitis .....		13	2	8	1		2	5		18
Periostitis .....		1		1				2		3
Caries .....		2		2						2
Necrosis .....		1		1			1			1
Synovitis, acute .....		3	2				1	1		5
Loose body in joint .....		4		3	1			1		4
Angular curvature of spine .....		1		1						1
Bursal tumor .....								1		1
DISEASES OF THE CONNECTIVE TISSUE										
Edema .....		16	9	3	2	1	1	30		46
Inflammation .....								3		3
Abscess .....		4	2	2				7		11
		12	7	1	2	1	1	20		32
DISEASES OF THE SKIN										
Erythema .....	3	62	50	10			5	75		140
Urticaria .....		1					1	1		2
Eczema .....								2		2
Impetigo .....		3	1	1			1	18		21
Psoriasis .....		1					1			1
Herpes .....								1		1
Zona .....		1		1				2		2
Pemphigus .....								1		1
Acne .....								1		1
Frostbite .....		26	24	2				9		35
Ulcer .....	3	21	17	5			2	19		43
Boil .....		3	3					4		7
Carbuncle .....		1	1					2		3
Gangrene .....		1	1					1		1
Whitlow .....		1	1					5		6
Onychia .....		1	1					2		3
Corn .....								1		1
Lupus .....		2	1	1				1		3
Wen .....								2		2
Pruritus .....								4		4
PARASITIC DISEASES OF THE SKIN										
Ringworm .....		2	2					7		9
Itch .....								1		1
Phthiriasis .....		1	1					4		5
Unclassified .....		1	1					2		2
		1	1							1
Poisons										
		1	1					3		4
Metals and their salts										
Vegetable poisons .....		1	1					2		2

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

## THE MISSISSIPPI—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
<b>Injuries .....</b>	<b>9</b>	<b>153</b>	<b>121</b>	<b>26</b>	<b>5</b>	<b>2</b>	<b>8</b>	<b>248</b>	<b>410</b>
GENERAL INJURIES.....		8	8					14	22
Burns and scalds.....		6	6					12	18
Effects of cold.....								2	2
Heat-stroke.....		1	1						1
Multiple injury.....		1	1						1
LOCAL INJURIES.....	9	145	113	26	5	2	8	224	388
Strain of muscles.....		1	1					10	11
Strain of tendons.....								1	1
Abrasion of skin.....		1	1					1	2
Foreign body in subcutaneous tissue.....								1	1
Contusion of scalp.....		2	2						2
Scalp wound:									
Bone not exposed.....		7	6		1			6	13
Bone exposed.....	1	1	1	1				2	4
Contusion of skull.....		1	1						1
Fracture of the vault of the skull.....	1	4	4			1			5
Compression of brain.....		1				1			2
Contusion of face.....						1		2	2
Wound of face and mouth.....	1	6	4	1	2			4	11
Fracture of facial bones.....		2	2					2	4
Contusion of the eye.....		1	1					2	3
Foreign body in cornea or conjunctiva.....								4	4
Wound of eyelid.....		1	1						1
Contusion of soft parts of neck.....		1	1						1
Wound of neck.....								2	2
Contusion of the chest.....		2	2					7	9
Fracture of the rib.....		2	1	1				2	4
Wound of parietes of chest.....		2	1	1				1	3
Perforating wound of chest.....		1		1					1
Penetrating wound of pleura or lung.....		1	1						1
Contusion of back.....		6	5	1				5	11
Sprain of back.....		6	5	1				31	37
Wound of back.....		2	2						2
Contusion of abdomen.....		1	1						1
Wound of parietes of abdomen.....		4	2	2					4
Contusion of testicle.....		4	2	2				1	5
Contusion of upper extremities.....		10	10					33	43
Sprain of the shoulder.....								2	2
Sprain of the elbow.....								1	1
Sprain of the wrist.....		2	2					6	8
Sprain of the fingers.....								3	61
Wound of the upper extremities.....		15	11	4				46	2
Fracture of the humerus.....		1		1				1	1
Fracture of both bones of forearm.....		1	1						42
Fracture of carpus, metacarpus, and phalanges.....								1	1
Dislocation of the humerus.....		1	1						1
Contusion of the lower extremities.....	2	15	15	1			1	25	42
Sprain of the hip.....								1	1
Sprain of the knee.....		3						8	11
Sprain of the ankle.....		9	7	1	1			4	13
Sprain of the foot.....								1	1
Wound of the lower extremities.....		16	9	5			2	14	30
Fracture of cervix femoris.....		1		1					1
Fracture of patella.....		1		1				3	4
Fracture of leg, both bones.....		4	1	1			2		4
Fracture of tibia alone.....	2	1	1				2		3
Fracture of fibula alone.....	1	2	2		1				3
Fracture of tarsus.....		1	1						1
Fracture of metatarsus.....	1	1	1				1		2
Dislocation of the knee.....		1	1					1	2





TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE GREAT LAKES—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
MENTAL DISEASES.....		4	1	1	1		1	3	7
Hypochondriasis.....		2	1				1	1	3
Insanity.....								2	2
Melancholia.....		1			1				1
Dementia.....		1		1					1
DISEASES OF THE EYE.....	2	32	16	11	2		5	99	133
Edema of the conjunctiva.....								1	1
Conjunctivitis.....		16	8	5			3	79	95
Keratitis.....	1	2	1	2				2	5
Ulcer of cornea.....		3	2	1				3	6
Opacity of cornea.....		1		1					1
Iritis.....		4	1	1	1		1	6	10
Atrophy of optic disc or papilla.....		1					1		1
Cataract.....	1	2	2		1			1	4
Ametropia.....								2	2
Abscess of lachrymal gland.....		1		1				1	1
Stricture of nasal duct.....								1	1
Hematoma.....								1	1
Blepharitis.....		1	1						1
Stye.....								2	2
Chalazion.....								1	1
Abscess.....		1	1						1
DISEASES OF THE EAR.....	1	16	10	7				61	78
Inflammation of the external meatus, acute.....		2	2					14	16
Accumulation of wax.....								24	24
Inflammation of the middle ear.....	1	14	8	7				21	36
Perforation of membrana tympani.....								2	2
DISEASES OF THE NOSE.....		2	1		1			64	66
Epistaxis.....		1	1						1
Inflammation.....								1	1
Nasal catarrh.....		1			1			63	64
DISEASES OF THE CIRCULATORY SYSTEM.....	5	32	4	20	4	7	2	72	109
Hydropericardium.....		1		1					1
Pericarditis.....		1		1					1
Valvular disease:									
Aortic.....	1	2		3					3
Mitral.....	1	19	1	10	1	7	1	27	47
Hypertrophy of heart.....		2			2			2	4
Inflammation of heart.....								1	1
Degeneration of heart, fatty.....		1		1					1
Dilatation of heart.....								8	8
Angina pectoris.....		1		1				1	2
Palpitation and irregular action of heart.....		1	1					17	18
Degeneration of arteries.....	2	1		2			1	2	5
Dilatation of arteries.....								1	1
Aneurism of arteries.....	1				1				1
Obstruction of arteries.....		1	1						1
Phlebitis.....								4	4
Varix.....		2	1	1				9	11
DISEASES OF THE RESPIRATORY SYSTEM.....	7	158	97	47	3	5	13	950	1,115
Hay asthma.....		1	1					1	3
Laryngitis:									
Acute.....		1	1					4	5
Chronic.....		1		1					1
Bronchitis:									
Acute.....	2	74	57	16	2		5	773	849
Chronic.....	1	20	3	13			1	103	124
Catarrhal.....								1	1
Dilatation of bronchi.....								1	1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

## THE GREAT LAKES—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE RESPIRATORY SYSTEM—Continued.									
Spasmodic asthma.....		6		5		1	22	28	
Passive congestion of lung.....		2	1	1				2	
Hæmorrhage of lung.....	1	1	2				3	5	
Pneumonia.....	2	24	16	2		4	3	30	
Pneumonic phthisis:									
Acute.....		4		3		1	2	6	
Chronic.....		4	1	2	1			4	
Emphysema.....		1		1				1	
Pleurisy:									
Acute.....	1	12	9	1		3	26	39	
Chronic.....		7	6	1			10	17	
DISEASES OF THE DIGESTIVE SYSTEM.....	7	187	142	35	6	5	6	1,169	1,363
Ulcer of the lips.....							2	2	
Stomatitis.....							3	3	
Ulcerative stomatitis.....							1	1	
Abscess of the antrum.....		1		1			1	2	
Ulceration of the dental pulp.....							2	2	
Caries of dentine and cementum.....							21	21	
Abscess of dental periosteum.....		1	1				4	5	
Inflammation of gums and alveoli.....							4	4	
Ulceration of gums and alveoli.....							3	3	
Toothache.....							3	3	
Leucoplacia.....							3	3	
Elongated uvula.....							1	1	
Sore throat.....		3	3				37	40	
Quinsy.....		2	1			1	10	12	
Follicular tonsillitis.....		9	9				73	82	
Sloughing sore throat.....		1	1					1	
Inflammation of salivary glands.....							7	7	
Abscess of salivary glands.....							1	1	
Follicular inflammation of pharynx.....		3	2	1			44	47	
Inflammation of the stomach.....		23	16	6		1	92	115	
Ulceration of the stomach.....	1	5	1	5			5	11	
Dyspepsia.....		10	7	2	1		230	240	
Gastrodynia.....							4	4	
Pyrosis.....							1	1	
Inflammation of the intestines:									
Catarrhal.....		8	8				32	40	
Ulcerative.....	1	9	7	1		1	1	11	
Abscess in the subperitoneal tissue.....		1	1					1	
Stricture of intestines.....		1	1					1	
Hernia.....		13	8	3		1	107	120	
Diarrhœa.....	2	35	29	5	2		151	188	
Constipation.....		6	6				188	194	
Colic.....		8	8				30	38	
Hæmorrhage of the rectum.....		1	1				1	2	
Abscess of the rectum.....							1	1	
Ulceration of the rectum.....		1		1				1	
Piles:									
Internal.....		6	5	1			20	26	
External.....		2	1			1	53	55	
Stricture of the rectum.....		1			1			1	
Fistula in ano.....		9	7	1	1		3	12	
Fissure of the anus.....							2	2	
Spasm of the sphincter ani.....							1	1	
Pruritus ani.....							3	3	
Atrophy of the liver.....		1			1			1	
Congestion of the liver.....	1	9	8	2			6	16	
Hepatitis.....		3	1	1		1	6	9	
Perihepatitis.....							1	1	
Cirrhosis of liver.....		2		1		1		2	
Jaundice.....		6	4	2			5	11	
Inflammation of hepatic ducts and gall-bladder.....	1	1	2				1	3	



TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDING JUNE 30, 1894—Continued.

## THE GREAT LAKES—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE GENERATIVE SYSTEM—Continued.									
Gallstones.....		2	2					4	6
Biliary colic.....		1		1				1	1
Ascites.....		2		1			1		2
Peritonitis.....	1	1	2						2
DISEASES OF THE LYMPHATIC SYSTEM.....	3	52	37	9	1		8	112	167
Hypertrophy of lymph-glands.....								1	1
Inflammation of lymph-vessels.....		2		1			1	2	4
Inflammation of lymph-glands.....	1	22	16	3			4	82	105
Suppuration of lymph-glands.....	2	27	31	5	1		2	27	56
Lymph-fistula.....		1					1		1
DISEASES OF THE THYROID BODY.....								2	2
Goitre.....								2	2
DISEASES OF THE URINARY SYSTEM.....	1	35	12	15	1	3	5	105	141
Congestion of kidney.....								2	2
Acute nephritis.....		5	2	3				9	14
Bright's disease.....		12		4	1	3	4	9	21
Abscess of kidney.....		1		1					1
Diabetes insipidus.....								5	5
Suppression of urine.....								1	1
Hæmaturia.....		1					1	1	2
Lithuria.....								2	2
Phosphuria.....								1	1
Oxaluria.....								1	1
Hæmorrhage of bladder.....								1	1
Inflammation of bladder:									
Acute.....	1	3	3	1				23	27
Subacute.....		1	1					14	15
Chronic.....		4	3	1				14	18
Calculus of bladder.....		2	1	1				3	5
Irritability of bladder.....		3	1	2				7	10
Incontinence of urine.....		3	1	2				12	15
DISEASES OF THE GENERATIVE SYSTEM.....	2	125	79	34	5	2	7	600	727
Urethritis.....		1		1				14	15
Gleet.....		1	1					40	41
Stricture of urethra:									
Organic.....		31	16	11	1		3	112	143
Spasmodic.....		1	1						1
Urinary fistula.....	1	5	1	2		2	1		1
Hypertrophy of prostate gland.....		1		1				1	2
Oedema of the penis.....								1	1
Inflammation of the penis.....	1		1						1
Inflammation of glans penis.....		4	3	1				13	17
Ulcer of penis.....		51	33	14	1		3	300	351
Phimosia.....		3	3					2	3
Paraphimosia.....		1	1					3	4
Abscess of the scrotum.....								1	1
Hydrocele of spermatic cord.....		1	1						1
Inflammation of spermatic cord.....		2	2					1	3
Varicocele.....		2	1		1			18	20
Hydrocele of tunica vaginalis.....		2		1	1			3	7
Atrophy of testicles.....								5	3
Orchitis:									
Acute.....		7	5	2				29	36
Chronic.....								13	13
Epididymitis.....		5	5					16	21
Spermatorrhœa.....								15	15
Impotence.....								3	3
Inflammation, fallopian tube.....	1				1				1
Inflammation of the ovary.....	1	1	1						1
Hypertrophy of the uterus.....	1	1	1						1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

## THE GREAT LAKES—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dis. pensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE GENERATIVE SYSTEM—Continued.									
Inflammation of the uterus.....		1	1					1	2
Laceration, cervix uteri.....		1		1					1
Inflammation of the vagina.....								1	1
Amenorrhœa.....								1	1
Menorrhagia.....								2	2
Leucorrhœa.....								3	3
Pregnancy.....								2	2
Abortion.....		2	2						2
DISEASES OF THE ORGANS OF LOCOMOTION.....									
Ostitis.....	3	59	22	30	3		7	39	101
Periostitis.....		11	5	3	1		2	2	13
Caries.....		5	2	3				1	6
Necrosis.....	1	8	4	3			2	3	12
Ununited fracture, or false joint.....	1	1	1		1				2
Dropsy of joints.....		1		1				1	2
Synovitis:									
Acute.....	1	9	2	6	1		1	9	19
Chronic.....		8	2	6				2	10
Ankylosis.....		2		2				2	4
Loose body in joint.....		1		1				1	2
Psoas, lumbar, and other abscesses.....		1					1		1
Abscess of muscles.....		3	2	1				2	5
Atrophy of muscles.....									2
Inflammation of tendons.....								1	1
Contraction of tendons and fasciæ.....									1
Inflamed bursa.....		2	1	1				1	7
Bursal abscess.....		1	1					1	1
Thecal abscess.....		2		2					3
Bunion.....								2	2
Ganglion.....		1	1						1
Bursal tumor.....		2	1	1				1	3
DISEASES OF THE CONNECTIVE TISSUE.....									
Edema.....	2	48	38	9			3	57	107
Inflammation.....		7	5	1			1	17	24
Abscess.....	2	39	32	8			1	40	81
DISEASES OF THE SKIN.....									
Erythema.....	7	92	69	23		1	6	500	599
Urticaria.....		1					1	18	19
Eczema.....	3	5	6	2				133	141
Intertrigo.....								2	2
Impetigo.....		1	1						1
Pityriasis.....		2	2					6	8
Prurigo.....								6	6
Lichen.....								3	3
Psoriasis.....		1	1					29	30
Herpes.....								30	30
Zona.....		3	3					8	11
Pemphigus.....		3	1			1	1	1	4
Acne.....								12	12
Sycosis.....		1	1					13	14
Steatorrhœa.....								2	2
Alopecia.....								3	3
Chilblain.....								1	1
Frostbite.....		9	8	1				5	14
Ulcer.....	3	46	28	17			4	99	148
Fissures.....								3	3
Boil.....		5	4	1				71	76
Carbuncle.....	1	5	6					7	13
Whitlow.....		8	6	2				18	26
Onychia.....								3	3
Corn.....								1	1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894.—Continued.

## THE GREAT LAKES—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE SKIN—Continued.									
Wen.....		2	2					2	4
Pruritus.....								1	1
Hyperidrosis.....								3	3
Hydrosis.....								1	1
PARASITIC DISEASES OF THE SKIN.....									
Ringworm.....		2	2					62	64
Tinea versicolor.....								9	9
Itch.....		1	1					6	6
Phthiriasis.....								43	44
Unclassified.....		1	1					3	3
								1	2
Poisons.....		4	2	1			1	1	5
Metals and their salts.....		2	1				1	1	3
Vegetable poisons.....		2	1	1					2
POISONED WOUNDS.....									
Venomous animals.....								1	1
								1	1
Injuries.....	30	330	84	7	6	33	624	1,084	
GENERAL INJURIES.....									
Burns and scalds.....	4	36	29	7	1	1	2	34	74
Effects of cold.....	3	25	20	5		1	2	25	53
Heat-stroke.....		1	1						1
Multiple injury.....		3	2	1				5	8
Exhaustion.....	1	5	4	1	1			3	9
		2	2					1	3
LOCAL INJURIES.....									
Contusion of nerves.....	26	394	301	77	6	5	31	590	1,010
Rupture of veins.....	1		1						1
Bruise of muscles.....		2	1			1			2
Strain of muscles.....		1	1					6	7
Rupture of muscles.....		3	2				1	19	22
Strain of tendons.....		1	1					1	2
Abrasion of skin.....		1	1						1
Foreign body in subcutaneous tissue.....		1	1					3	4
Abrasion of mucous membrane.....								2	2
Contusion of scalp.....		6	6					1	7
Scalp wound:									
Bone not exposed.....		16	15	1				16	32
Bone exposed.....		3	2	1				6	9
Contusion of skull.....		1		1					1
Fracture of the vault of the skull.....		2				1	1		2
Fracture of the base of the skull.....		1		1					1
Contusion of brain.....	1	1	2						2
Compression of brain.....		1			1				1
Contusion of face.....		8	7	1				6	14
Wound of face and mouth.....		14	13		1			24	38
Fracture of facial bones.....	1	6	4	3				1	8
Injuries of the alveoli and teeth.....		1	1						1
Contusion of the eye.....		2	2					2	4
Foreign body in cornea or conjunctiva.....		2	2					13	15
Wound of eyelid.....		2	1				1	9	11
Wound of the cornea.....								1	1
Wound of the parts within the orbit.....		2	2						2
Contusion of pinna.....								3	3
Wound of neck.....								1	1
Foreign body in the esophagus.....								1	1
Contusion of the chest.....	1	18	17	2				16	35
Fracture of the ribs.....	3	17	15	5				3	23
Wound of parietes of chest.....		2	1	1					2
Contusion of back.....		19	14	4			1	13	32
Sprain of back.....		14	11	3				17	31

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE, 1894—Continued.

## THE GREAT LAKES—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Injuries—Continued.									
LOCAL INJURIES—Continued.									
Wound of back .....		2	1		1			1	3
Wound of spine .....		1	1						1
Fracture of spine .....	1	1	1			1			2
Concussion of cord .....	1			1					1
Contusion of abdomen .....								5	5
Wound of parietes of abdomen .....		2	2					2	4
Contusion of the pelvis .....		2	1				1		2
Fracture and discoloration of pelvis .....		2		2					2
Contusion of testicle .....								2	2
Contusion of upper extremities .....	1	18	13	4			2		65
Sprain of the shoulder .....		4	4					48	52
Sprain of the elbow .....								8	
Sprain of the wrist .....		8	6				2		30
Sprain of the fingers .....		1	1					22	6
Wound of the upper extremities .....	5	36	34	5	1		1	5	148
Fracture of the clavicle .....		2	1	1				4	6
Fracture of the scapula .....		1		1					1
Fracture of the humerus .....		4	2	1			1	1	5
Fracture of the radius .....		5	4	1				5	10
Fracture of the ulna .....		4	2	1			1	2	6
Fracture of both bones of forearm .....		3	2	1				1	4
Fracture of carpus, metacarpus, and phalanges .....	1	5	1	3			2	11	17
Dislocation of the humerus .....		5	3	1	1			3	8
Dislocation of the radius .....		2	1	1					2
Dislocation of the phalanges of thumb .....		1		1				1	2
Dislocation of the phalanges of fingers .....		1	1						1
Contusion of the lower extremities .....	2	53	40	10			5	56	111
Sprain of the hip .....								1	1
Sprain of the knee .....		4	3	1				10	14
Sprain of the ankle .....		25	23				2	27	52
Sprain of the foot .....	1			1				3	4
Wound of the lower extremities .....	3	32	22	10			3	39	74
Wound of joint, lower extremities .....								1	1
Fracture of femur .....	1	4		2	1		2	9	14
Fracture of patella .....		2	1	1					2
Fracture of leg, both bones .....	2	6	4	2		2		1	9
Fracture of tibia alone .....		1							1
Fracture of fibula alone .....		6	3				3	1	7
Fracture of tarsus .....		2	1	1				2	4
Fracture of metatarsus .....		1		1				1	2
Dislocation of the femur at the hip .....		1		1					1
Dislocation of the knee .....	1						1		1
AMPUTATIONS .....	1	3	3				1	6	10
Amputation of fingers .....	1	2	3					5	8
Amputation of leg .....		1					1		1
Amputation of toes .....								1	1

## THE PACIFIC.

<b>TOTAL CASES</b> .....	145	1,368	673	627	33	56	124	3,899	5,412
<b>General Diseases</b> .....	56	528	228	286	10	25	40	1,558	2,142
Measles .....								1	1
Influenza .....		54	26	28				79	133
Mumps .....		1	1					4	5
Simple continued fever .....		1	1						1
Enteric fever .....	2	18	15			3	2	1	21
Dysentery .....	3	8	7	1		1	2	10	21

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE PACIFIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
General Diseases—Continued.									
TOTAL CASES—Continued.									
Malarial intermittent fever.....		32	24	6			2	91	123
Malarial remittent fever.....	1	9	5	1	1		2	2	12
Malarial cachexia.....		3	1	2				8	11
Erysipelas, simple.....	2	9	10				1	6	17
Pyæmia.....		2		2				4	6
Septicæmia.....		1		1				1	2
Syphilis:									
Primary.....	1	13	1	12			1	41	55
Secondary.....	9	80	4	80	1		4	393	482
Gonorrhœa.....	8	50	35	22			1	517	575
Animal parasites.....		1	1					6	7
Vegetable parasites.....		1		1					1
Effects of excessive venery.....								1	1
Scurvy.....	1	7	3	4		1		8	16
Alcoholism.....	1	6	6	1				17	24
Delirium tremens.....		1	1					1	2
Hypospadias.....								2	2
Debility.....	2	6	3	5				16	24
Rheumatic fever.....	8	68	36	36	1		3	34	110
Rheumatism.....	6	74	37	38			5	229	309
Gout.....		3	1	1			1	1	4
Osteo-arthritis.....	1	4		4			1	1	6
Cysts.....		1					1		1
Nonmalignant new growth.....	1	6	2		1			12	19
Malignant new growth.....	1	4	1		2	2		2	7
Tubercle.....	9	59		35	4	17	12	54	122
Scrofula.....		1		1				5	6
Leprosy.....		1					1		1
Anæmia.....	2	2						5	7
Diabetes mellitus.....		2		1			1	6	8
Local Diseases.....	56	608	300	252	21	29	62	1,850	2,514
DISEASES OF THE NERVOUS SYSTEM.....									
Congestion, cerebral.....	9	47	12	21	2	6	15	87	143
Hæmorrhage, cerebral.....		3		2	1			2	5
Inflammation:	1	1		1		1			3
Of cerebral membranes.....		1		1					1
Of spinal cord and its membranes.....		1		1					1
Myelitis.....	1	1					1		2
Neuritis.....		1		1				1	2
Spastic spinal paralysis.....	1						1		1
Locomotor ataxy.....		2		1			1		2
Hemiplegia.....	3	6		3	1	1	4	2	11
Paraplegia.....		1				1			1
Local paralysis.....	2	2	1			2	1	7	11
Spasm of muscle.....								3	3
Neuralgia.....		7	3	1			3	39	46
Facial.....		2	2					3	5
Sciatica.....		11	3	5			3	14	25
Vertigo.....		2	1				1	3	5
Migrain.....		2	2					6	8
Epilepsy.....	1	4		4		1		7	13
MENTAL DISEASES.....									
Hypochondriasis.....		5		2	2		1	15	20
Dementia.....		2		1			1	13	15
		3		1	2			2	5
DISEASES OF THE EYE.....									
Conjunctivitis.....		19	5	12	1		1	53	73
Pterygium.....		5	3	2				28	33
Keratitis.....		2		2				2	2
Opacity of cornea.....								1	1
Iritis.....		1		1				2	3
Atrophy of optic disk or papilla.....		3	1	1			1		3
		2		2					3

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE PACIFIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE EYE—Continued.									
Inflammation of optic nerve.....								1	
Neuro-retinitis.....								1	
Retinitis.....		2		1	1			2	
Cataract.....		1		1					
Ametropia.....		1		1				1	
Night-blindness.....								4	
Snow-blindness.....		1	1						
Day-blindness.....								3	
Diplopia.....								1	
Hæmatoma.....								2	
Blepharitis.....								3	
Stye.....								2	
Trichiasis.....								1	
Ectropion.....		1		1					
Chalazion.....								1	
DISEASES OF THE EAR.....									
Hæmatoma of the auricle.....		4	3				1	37	
Inflammation of the external meatus, acute.....								1	
Abscess of the external meatus.....		1	1					3	
Accumulation of wax.....								5	
Inflammation of the middle ear.....		3	2				1	16	
Obstruction of Eustachian tube.....								8	
Deafness.....								1	
DISEASES OF THE NOSE.....									
Hypertrophy.....		7	1	5			1	27	
Inflammation.....		1		1				5	
Nasal catarrh.....		2		2					
Abscess.....		2		1			1	18	
Ulceration.....		1						1	
Ozena.....		1	1	1				3	
DISEASES OF THE CIRCULATORY SYSTEM.....									
Hydropicardium.....	4	28		21	2	3	6	31	
Valvular disease:		1				1			
Aortic.....	1	6		5			2	8	
Mitral.....	1	11		9	1	1	1	6	
Angina pectoris.....		1		1				2	
Syncope.....								2	
Palpitation and irregular action of heart.....		2		1			1	8	
Degeneration of arteries.....		1		1					
Aneurism of arteries.....	1	5		3	1	1	1	3	
Obstruction of arteries.....	1						1		
Phlebitis.....		1		1					
Varix.....								2	
DISEASES OF THE RESPIRATORY SYSTEM.....									
Laryngitis:	6	126	71	48	1	8	4	343	47
Acute.....		2	1	1				2	
Chronic.....		1	1					1	
Catarrhal.....								1	
Aphonia.....								3	
Bronchitis:									
Acute.....		41	34	5	1		1	235	27
Chronic.....	1	16	4	12		1		74	9
Catarrhal.....		1	1					1	
Spasmodic asthma.....	1	7	1	7				12	2
Passive congestion of lung.....		4		3			1		
Hæmorrhage of lung.....		1		1				1	
Pneumonia.....	1	29	17	9		4		5	3
Emphysema.....								1	
Hydrothorax.....		2		1		1			

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

## THE PACIFIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE RESPIRATORY SYSTEM—Continued.									
Pleurisy.....									
Acute.....	2	18	10	7		2	1	6	26
Chronic.....		3	1	2					3
Empyema.....	1	1	1				1		2
Adhesions of pleura.....								2	2
DISEASES OF THE DIGESTIVE SYSTEM.....									
Ulcer of the lips.....	4	103	58	36	4	4	5	477	584
Stomatitis.....								1	1
Ulcerative stomatitis.....		1		1				2	2
Abscess of the antrum.....	1	2	2	1					1
Caries of dentine and cementum.....									3
Abscess of dental periosteum.....									26
Inflammation of gums and alveoli.....		1	1						5
Toothache.....									3
Inflammation of the tongue.....									4
Ulcer of the tongue.....									1
Elongated uvula.....									1
Sore throat.....		1		1					3
Quinsy.....		9	8	1					3
Follicular tonsillitis.....		7	1	6					1
Ulceration of fauces.....									46
Inflammation of salivary glands.....									8
Follicular inflammation of pharynx.....		1	1						17
Stricture of œsophagus.....									24
Dysphagia.....		1					1		1
Inflammation of the stomach.....		22	13	6		2	1	123	145
Ulceration of the stomach.....		2		1		1			3
Dilatation of the stomach.....									1
Dyspepsia.....		3		2			1	64	67
Hæmorrhage of the intestines.....		1		1					1
Inflammation of the intestines:									
Catarrhal.....		5	5						5
Ulcerative.....		3	3						1
Hernia.....		7	3	3	1			37	4
Fistula of intestines.....		1			1				44
Diarrhœa.....		8	7	1				17	1
Constipation.....		3	2		1				25
Colic.....								42	45
Abscess of the rectum.....								3	3
Ulceration of the rectum.....								1	1
Piles:								6	6
Internal.....		2	2						
External.....	1	3		3	1				8
Fistula in ano.....	1	11	8	2		1	1		12
Fissure of the anus.....		1		1					8
Hypertrophy of the liver.....		3		2			1		3
Congestion of the liver.....									4
Hepatitis.....	1	2	1	2				11	14
Cirrhosis of liver.....		1		1					1
Jaundice.....		1		1				2	3
Obstruction of hepatic ducts and gall bladder.....		1	1						
Ascites.....								1	1
DISEASES OF THE LYMPHATIC SYSTEM.....									
Hypertrophy of the spleen.....	5	30	21	7	3	1	3	85	120
Hypertrophy of lymph-glands.....		1				1			16
Inflammation of lymph-glands.....		10	5	1	3			2	20
Suppuration of lymph-glands.....	5	18	15	6			1	24	34
Lymphadenoma.....		1	1				2	59	82
DISEASES OF THE URINARY SYSTEM.....									
Congestion of kidney.....	4	49	8	35		6	4	78	121
Acute nephritis.....		1	1						1
		15	2	13				11	2







TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

## THE PACIFIC—Continued.

Diseases.	Number of cases.								
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.
			Recovered.	Improved.	Not improved.				
Local Diseases—Continued.									
DISEASES OF THE SKIN—Continued.									
Pityriasis .....							3	3	
Lichen .....							9	9	
Psoriasis .....							1	1	
Herpes .....							13	13	
Zona .....		1	1				6	7	
Acne .....							9	9	
Frostbite .....		1	1				6	7	
Ulcer .....	9	27	20	12	1	3	91	127	
Boil .....		4	4				40	44	
Carbuncle .....		5	4	1			13	18	
Whitlow .....		4	4				27	31	
Onychia .....							1	1	
Corn .....							3	3	
Lupus .....		1	1				1	2	
Wen .....		1	1				3	4	
PARASITIC DISEASES OF THE SKIN .....									
Ringworm .....		2	1	1			20	22	
Tinea versicolor .....							6	6	
Itch .....		2	1	1			5	7	
Phthiriasis .....							7	7	
Unclassified .....							1	1	
POISONED WOUNDS .....									
Venomous animals .....							1	1	
							1	1	
Injuries .....	33	232	150	89	2	2	22	490	
GENERAL INJURIES .....									
Burns and scalds .....	4	24	19	8			1	42	
Effects of cold .....	2	7	7	2			20	29	
Effects of chemical irritants .....		2	1				1	17	
Effects of chemical irritants .....	1		1					1	
Multiple injury .....	1	15	10	6			3	19	
Exhaustion .....							4	4	
LOCAL INJURIES .....									
Wound of nerve .....	29	208	131	81	2	2	21	448	
Strain of muscles .....	1			1				685	
Strain of tendons .....	1	4	3	1			5	1	
Effects of irritants .....							1	10	
Abrasion of skin .....		1	1				4	4	
Contusion of scalp .....							2	3	
Scalp wound:							4	4	
Bone not exposed .....		2	6	6	2		19	27	
Bone exposed .....							2	2	
Fracture of the vault of the skull .....		2		1		1		2	
Concussion of brain .....		1	1	1				1	
Contusion of face .....		3	2				1	11	
Wound of face and mouth .....		3	2				21	24	
Fracture of facial bones .....		3	1	1		1	1	4	
Contusion of the eye .....		1		1			1	2	
Foreign body in cornea or conjunctiva .....							6	6	
Wound of eyelid .....		1	1					1	
Wound of the cornea .....							1	1	
Foreign body in external meatus .....							1	1	
Contusion of the chest .....		6	2	4			21	27	
Dislocation of costal cartilages .....							1	1	
Fracture of the ribs .....	1	12	9	4			3	16	
Wound of parietes of chest .....		1		1			1	2	
Contusion of back .....	1	5	2	3		1	15	21	
Sprain of back .....		6	5	1			42	48	
Wound of back .....		1		1				1	
Wound of spine .....		1		1				1	
Fracture of spine .....	1			1				1	

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

THE PACIFIC—Continued.

Diseases.	Number of cases.									
	Remaining under treatment from previous year.	Admitted during the year.	Discharged.			Died.	Remaining under treatment at the close of the year.	Number furnished office relief.	Number treated in hospital and dispensary.	
			Recovered.	Improved.	Not improved.					
Injuries—Continued.										
LOCAL INJURIES—Continued.										
Wound of parietes of abdomen.....		1				1				1
Contusion of the urethra, perineum, scrotum, and penis.....		1	1					3		4
Fracture and dislocation of pelvis.....		1					1			1
Contusion of testicle.....		1	1					4		5
Contusion of upper extremities.....	2	8	7	1		2		28		38
Sprain of the shoulder.....								9		9
Sprain of the wrist.....		2		2				16		18
Sprain of the fingers.....								4		4
Wound of the upper extremities.....	4	18	15	5		2		88		110
Fracture of the clavicle.....		2	1			1	1			3
Fracture of the scapula.....		1	1							1
Fracture of the humerus.....		2	1	1				1		3
Fracture of the radius.....	1	6	3	2		2				7
Fracture of the ulna.....		1	1					2		3
Fracture of both bones of forearm.....		2		1			1	1		3
Fracture of carpus, metacarpus, and phalanges.....		7	1	4			2	13		20
Dislocation of the clavicle.....		1		1				1		2
Dislocation of the humerus.....		4	1	2	1			2		6
Dislocation of the carpus.....		1		1						1
Dislocation of the metacarpus.....								1		1
Contusion of the lower extremities.....		20	12	6		2		42		62
Sprain of the hip.....	1									1
Sprain of the knee.....	1	2		2	1			21		24
Sprain of the ankle.....	2	13	11	4				15		30
Sprain of the foot.....								1		1
Wound of the lower extremities.....	1	32	23	10				30		63
Fracture of femur.....	5	2	3	2			2			7
Fracture of patella.....		2		1			1			2
Fracture of leg, both bones.....	2	6	5	2			1	2		10
Fracture of tibia alone.....		2	1	1			1	2		4
Fracture of fibula alone.....	2	3	3	2						5
Fracture of metatarsus.....		2		2						2
Fracture of phalanges of toes.....		3	2	1						3
Dislocation of the knee.....	1			1				1		2
Dislocation of the foot at the ankle.....		2	1	1				1		3
AMPUTATIONS.....										
Amputation of fingers.....		1	1					1		2

## QUARANTINE.

<b>TOTAL CASES.....</b>	<b>1</b>	<b>29</b>	<b>23</b>			<b>6</b>	<b>1</b>	<b>80</b>	<b>110</b>
<b>General Diseases.....</b>		<b>23</b>	<b>18</b>			<b>4</b>	<b>1</b>	<b>31</b>	<b>54</b>
Influenza.....								2	2
Yellow fever.....		10	6			3	1		10
Dysentery.....		1	1					1	2
Malarial intermittent fever.....		1	1					2	3
Malarial remittent fever.....		10	10					9	19
Syphilis:									
Primary.....								1	1
Secondary.....								4	4
Gonorrhoea.....								2	2
Delirium tremens.....								1	1
Debility.....								1	1
Rheumatic fever.....								1	1
Rheumatism.....								6	6
Tubercle.....		1				1		1	2

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE YEAR ENDED JUNE 30, 1894—Continued.

**QUARANTINE—Continued.**

[illegible]

TABLE VIII.—TABULAR STATEMENT, BY DISTRICTS, OF CAUSES OF MORTALITY AMONG PATIENTS OF THE SERVICE DURING THE YEAR ENDED JUNE 30, 1894.

Causes of death.	Total.	Districts.							
		North Atlantic.	Middle Atlantic.	South Atlantic.	The Gulf.	The Ohio.	The Mississippi.	The Great Lakes.	The Pacific.
<b>Total Deaths from all Causes...</b>	<b>448</b>	<b>43</b>	<b>83</b>	<b>78</b>	<b>33</b>	<b>29</b>	<b>53</b>	<b>67</b>	<b>56</b>
FROM DISEASES.....	423	41	78	75	31	29	50	60	54
FROM INJURIES.....	25	2	5	3	2		3	7	2
<b>General Diseases.....</b>	<b>214</b>	<b>20</b>	<b>36</b>	<b>43</b>	<b>14</b>	<b>14</b>	<b>23</b>	<b>35</b>	<b>25</b>
Smallpox.....								1	
Influenza.....		1		2	1		1	1	
Euteric fever.....		3	7	6	1	2		8	3
Typho-malarial fever.....			1	1			1		
Yellow fever.....									3
Dysentery.....		1	2	3	3		1		1
Malarial intermittent fever.....			3		1		3	2	
Malarial remittent fever.....				9			3	2	1
Malarial cachexia.....		2							
Erysipelas:									
Simple.....								1	
Phlegmonous.....								1	
Pyæmia.....			1						
Syphilis:									
Primary.....			1						
Secondary.....				3	1			1	
Scurvy.....									1
Alcoholism.....					1		2	2	
Debility.....					1				
Rheumatic fever.....			1						
Rheumatism.....			2	2		1	1	1	
Nonmalignant new growth.....			1	1			1	1	
Malignant new growth.....		2	1	1			1	1	2
Tubercle.....		11	17	16	5	11	10	13	17
<b>Local Diseases.....</b>	<b>209</b>	<b>22</b>	<b>42</b>	<b>32</b>	<b>17</b>	<b>15</b>	<b>26</b>	<b>25</b>	<b>29</b>
<b>DISEASES OF THE NERVOUS SYSTEM..</b>	<b>25</b>	<b>3</b>	<b>4</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>3</b>	<b>6</b>
Congestion, cerebral.....				1					1
Hæmorrhage, cerebral.....							1		
Inflammation of brain and its membranes.....						1			
Spinal meningitis.....							1		
Abscess of brain.....		1		1				1	
Softening of brain.....			1				1		
Progressive muscular atrophy.....								1	
Locomotor ataxy.....								1	
Paralysis.....		1			1				
Hemiplegia.....			2			1			1
Paraplegia.....		1							1
Local paralysis.....									2
Eclampsia.....			1						
Epilepsy.....							1	1	1
<b>MENTAL DISEASES.....</b>	<b>4</b>	<b>1</b>		<b>2</b>	<b>1</b>				
Melancholia.....				1	1				
Dementia.....		1							
Idiocy.....				1					
<b>DISEASES OF THE CIRCULATORY SYSTEM.....</b>	<b>25</b>	<b>2</b>	<b>5</b>	<b>4</b>		<b>4</b>	<b>2</b>	<b>6</b>	<b>2</b>
Hydropericardium.....									1
Pericarditis.....							1		
Valvular disease:									
Aortic.....			1						
Mitral.....			2	2		3	1	5	1
Dilatation of heart.....				1					
Palpitation and irregular action of heart.....			1						
Aneurism of arteries.....		1		1		1		1	
Rupture of arteries.....		1							
Phlebitis.....			1						

**TABLE VIII.—TABULAR STATEMENT, BY DISTRICTS, OF CAUSES OF MORTALITY, ETC., DURING THE YEAR ENDED JUNE 30, 1894—Continued.**

TABLE IX.—SURGICAL OPERATIONS, FISCAL YEAR 1894.

Operations.	Number of cases.	Remarks.
<b>Total number of Operations.....</b>	<b>900</b>	
<b>REMOVAL OF TUMORS.....</b>	<b>48</b>	
For epithelioma of lip.....	2	Excision.
For epithelioma of testicle.....	1	Castration.
For sarcoma of hip.....	1	Excision.
For sarcoma of arm.....	1	Do.
For fibroma of penis.....	1	Do.
For fibroma of elbow.....	1	Do.
For lipoma (shoulder, testicle, back, and neck).....	9	Do.
For papillomata of penis.....	1	Circumcision.
For papillomata of scalp.....	2	Excision.
For papillomata of groin.....	1	Do.
For cysts (sebaceous).....	13	Dissected out.
For cysts of neck.....	1	Excision.
For cysts of penis.....	1	Do.
For cysts of nose.....	1	Do.
For cysts dermoid.....	1	Do.
For cystiform hæmatoma.....	2	Aspiration.
For ranula.....	1	Excision.
For condylomata of anus.....	1	Removed with cautery.
For keloid.....	1	Excision.
For osteo-chondroma.....	1	Do.
For bursal tumor of hand.....	2	Incised and curetted.
For bursal tumor of hip.....	1	Excision.
For polypus of external ear.....	1	Do.
<b>REMOVAL OF FOREIGN BODIES.....</b>	<b>1</b>	
For piece of bone in rectum.....	1	Removed.
<b>OPENING OF ABSCESES.....</b>	<b>45</b>	
For abscess of connective tissue.....	24	Incised, curetted, and packed.
For abscess of connective tissue of neck with redema of glottis.....	1	Tracheotomy; death.
For abscess of perineum.....	3	Incised and packed.
For abscess of face.....	1	Do.
For abscess over sacrum.....	1	Incised and drained.
For abscess of leg.....	1	Do.
For abscess of foot.....	1	Do.
For abscess of back.....	1	Do.
For abscess ischiorectal.....	2	Incised and packed; 1 unsuccessful
For abscess of testicle.....	1	Incised and drained.
For abscess of scrotum.....	2	Do.
For abscess of buttocks.....	3	Incised and packed; death, 1.
For abscess of breast (tubercular).....	1	Incised and packed.
For abscess of rectum.....	1	Do.
For abscess psoas.....	2	Do.
<b>OPERATIONS ON NERVES.....</b>	<b>3</b>	
For sciatica of both legs.....	1	Nerve stretched.
For cicatrix of arm producing paralysis.....	1	Musculo-spiral nerve dissected from cicatrix.
For wound of foot.....	1	Portion of plantar nerve excised.
<b>OPERATIONS ON THE EYE AND APPENDAGES.....</b>	<b>13</b>	
For glaucoma.....	1	Iridectomy.
For panophthalmitis.....	4	Enucleation of eyeball.
For rupture of eyeball.....	1	Do.
For pterygium.....	2	Excision.
For chalazion.....	1	Incised and scraped.
For stricture of nasal duct.....	1	Dilated.
For abscess of lachrymal sac.....	2	Incised.
For foreign body in conjunctiva.....	1	Removed.
<b>OPERATIONS ON FACE, NOSE, AND MOUTH.....</b>	<b>22</b>	
For elongation of uvula.....	1	Portion of uvula removed.
For necrosis of jaw.....	1	Dead bone removed.
For fracture of inferior maxilla.....	3	Reduction fragments wired.
For caries of inferior maxilla.....	3	Osteotomy, 1; curetted, 2.
For necrosis of upper jaw.....	1	Sequestrum removed.
For epithelioma of face.....	1	Excision.
For polypus of nose.....	3	Removed.
For hypertrophy of mucous membrane of nose.....	7	Portion of membrane removed.
For abscess of antrum.....	2	Tooth removed and drained.
<b>OPERATIONS ON THE SKULL AND CONTENTS.....</b>	<b>13</b>	
For depressed fracture of skull.....	4	Trephined and bone elevated.
For compound fracture of skull with depression.....	2	Depressed bone elevated; death, 1.
For suppurat of mastoid cell.....	3	Opened and drained.
For inflammation of middle ear.....	1	Drum incised.

TABLE IX.—SURGICAL OPERATIONS, FISCAL YEAR 1894—Continued.

Operations.	Num- ber of cases.	Remarks.
<b>OPERATIONS ON THE SKULL AND CONTENTS—Cont'd.</b>		
For furuncle of external auditory canal.....	1	Incised.
For scalp wounds.....	1	Trephined.
For abscess of brain.....	1	Trephined; death.
<b>OPERATIONS ON THE ARTERIES.....</b>		
For popliteal aneurism.....	1	Ligation of femoral artery.
<b>OPERATIONS ON VEINS.....</b>		
For phlebitis.....	2	Resection of vein.
For varicose veins.....	1	Excision of veins.
<b>OPERATIONS ON THE RESPIRATORY ORGANS.....</b>		
For pleurisy with effusion.....	26	Paracentesis.
For empyema.....	19	Paracentesis unsuccessful, 1; para- centesis and drainage, 2; death, 1; resection of ribs, 1 unsuccessful.
For pericarditis with effusion.....	4	Paracentesis of pericardium.
For incised wound of chest.....	1	Dressed.
For punctured wound of back; lung injured.....	1	Piece of fork removed.
<b>OPERATIONS ON THE ORGANS OF DIGESTION.....</b>		
For hernia, inguinal oblique.....	116	Radical cure.
For hernia, inguinal direct.....	16	Do.
For hernia, inguinal strangulated.....	3	Herniotomy.
For appendicitis.....	2	Laparotomy and removal of appen- dix; deaths, 2.
For fistula in ano.....	5	Incised and curetted; unsuccessful, 2.
For hemorrhoids internal.....	34	Ligated, clamp, and cautery, 4; Whitehead's operation, 1; injection carbolic acid, 1.
For hemorrhoids external.....	17	Ligated, excised, clamp, and cau- tery, 1.
For polypus of rectum with hemorrhoids.....	16	Whitehead's operation, 1; ligation and excision, 1.
Do.....	2	Linear cauterization.
For wound of sphincter ani.....	1	Sutured.
For ascites.....	19	Paracentesis of abdomen; death, 1.
<b>OPERATIONS ON THE LYMPHATIC ORGANS.....</b>		
For inflammation of lymph-glands.....	189	Enucleation, 67; incised and curetted, 33.
For suppuration of lymph-glands.....	100	Enucleation, 52; incised and curetted, 20.
For tubercular glands of neck.....	6	Enucleation.
For enlarged glands of neck.....	6	Enucleation, injection of iodoform emulsion.
For tubercular glands of axilla.....	3	Enucleation.
For syphilitic adenitis.....	1	Incised and curetted.
For tubercular lymphangitis.....	1	Abscess incised.
<b>OPERATIONS ON THE URINARY ORGANS.....</b>		
For stricture of urethra.....	130	
Gradual dilatation.....	23	Death, 1.
Forcible dilatation.....	4	
Internal urethrotomy.....	84	
External urethotomy.....	10	Death, 3; perineal section with supra- pubic cystotomy, 1.
For stricture of meatus of urethra.....	2	Meatotomy.
For rupture of urethra.....	1	Perineal section.
For fistula of urethra.....	2	Perineal section internal urethrot- omy, 1.
For wound of bladder.....	2	Restoration; unsuccessful, 1.
For papilloma of bladder.....	1	Supra-pubic cystotomy; tumor re- moved.
For carcinoma of bladder and urethral fistula.....	1	Perineal section.
<b>OPERATIONS ON THE ORGANS OF GENERATION.....</b>		
For phimosis.....	112	Circumcision, prepuce slit, 4.
For ulcer of penis.....	82	Excision and cauterization.
For epithelioma of glans penis.....	2	Amputation of glans penis.
For gangrene of prepuce.....	1	Circumcision.
For phagadæna of penis and groin.....	1	Curetted.
For paraphimosis (gangrene, 1).....	5	Circumcised 4, prepuce slit.
For hydrocele.....	13	Tapped and carbolic acid injected; iodine injected, 1; unsuccessful, 5.
For chronic orchitis.....	2	Castration.
For tuberculosis of testicle.....	2	Do.
For varicocele.....	2	Subcutaneous ligation.
For hæmatocele.....	1	Incised and clot removed.

TABLE IX.—SURGICAL OPERATIONS, FISCAL YEAR 1894—Continued.

Operations.	Num- ber of cases.	Remarks.
<b>OPERATIONS ON THE ORGANS OF LOCOMOTION.....</b>	<b>92</b>	
<b>Bones:</b>		
For fracture of ulna.....	11	Reduction and splint; excision of el- bow joint, 1.
For fracture of tibia (compound).....	1	Reduction and splint.
For fracture of tibia.....	1	Do.
For fracture of tibia (ununited).....	1	Fragments wired.
For fracture of tibia and fibula.....	2	Reduction and splint.
For fracture of femur (compound).....	1	Reduction and splint; unsuccessful.
For fracture of femur.....	1	Reduction and splint.
For fracture of patella.....	2	Fragments wired.
For fracture of humerus.....	2	Reduction and splint.
For fracture of forearm (both bones).....	1	Do.
For fracture ununited.....	1	Osteotomy.
For necrosis of tibia.....	7	Bone scraped; sequestra removed, 3.
For necrosis of ileum.....	1	Scraped and portion of bone removed.
For necrosis of finger.....	3	Dead bone removed.
For necrosis of fibula.....	1	Do.
For necrosis of small bone of foot.....	1	Osteotomy.
For caries of ilium.....	1	Curetted.
For caries of tibia.....	2	Bone scraped and skin grafted.
For caries of fibula.....	1	Abscess incised.
For caries of tarsus.....	1	Curetted; unsuccessful.
For caries of toe.....	1	Curetted.
For caries of metatarsal bones.....	1	Dead bone removed.
For caries of radius.....	1	Curetted.
<b>Joints:</b>		
For dislocation of shoulder.....	6	Reduction.
For dislocation of clavicle.....	1	Do.
For dislocation of head of tibia.....	1	Do.
For dislocation of hip.....	1	Do.
For dislocation of radius.....	1	Do.
For dislocation of carpus (old).....	1	Unsuccessful; only partial reduction.
For dislocation of ankle.....	1	Reduction.
For tuberculosis of acromio-clavicular joint.....	1	Diseased bone removed.
For ankylosis of shoulder joint.....	2	Forcible extension and flexion.
For ankylosis of phalanges of finger.....	1	Subcutaneous tenotomy.
For ankylosis of elbow joint.....	1	Excision of head of radius.
For synovitis of knee joint.....	6	Aspiration.
For bunion.....	1	Excision of metatarso-phalangeal joint.
For abscess of knee joint.....	1	Opened and drained.
For inflamed ura of knee joint.....	3	Aspirated and injected with tincture of iodine; 2 unsuccessful.
<b>Tendons:</b>		
For contusion of hand.....	1	Adherent tendon released.
For talipes equinus.....	1	Subcutaneous tenotomy.
For inflammation of sheath of tendon.....	1	Curetted.
For contraction of thumb.....	1	Released by incision.
For contraction of toe.....	1	Tenotomy.
<b>Miscellaneous:</b>		
For gunshot wound of leg, with abscess.....	1	Incised, curetted, and packed.
For gunshot wound of wrist, with caries of carpal bones.....	1	Dead bone removed.
For painful cicatrix of finger.....	1	Cicatrix removed.
For burn of foot.....	1	Skin grafting.
For wound of foot.....	2	Exploratory incision.
For whitlow.....	1	Incision.
For wound of thigh.....	1	Skin grafting.
For wound of hand (poisoned).....	2	Incised.
<b>Amputations.....</b>	<b>58</b>	
Finger for gangrene.....	2	
Finger for contraction.....	2	
Finger for lacerated wound.....	5	
Finger for frostbite.....	5	
Finger for poisoned wound.....	5	
Finger for abscess.....	2	
Finger for fracture (compound).....	2	
Finger for necrosis.....	16	
Finger for whitlow.....	3	
Thumb for whitlow.....	2	
Hand for scald.....	1	
Humerus for compound comminuted fracture of forearm.....	1	Necrosis, 1.
At shoulder joint.....	1	Just above condyles.
At hip joint.....	1	
At middle third of thigh.....	1	For paralysis of arm.
At lower third of leg.....	1	Tuberculosis of joint.
Leg for tuberculosis of joint.....	1	Disease of knee joint.
Leg for compound comminuted fracture.....	1	Necrosis of tarsus.



TABLE IX.—SURGICAL OPERATIONS, FISCAL YEAR 1894—Continued.

Operations.	Num- ber of cases.	Remarks.
<b>OPERATIONS ON THE ORGANS OF LOCOMOTION—Continued.</b>		
Amputations—Continued.		
Both legs for compound fracture.....	1	Double amputation; death.
Foot for fracture metatarsal bone.....	1	
Great toe for senile gangrene.....	1	
Toe for necrosis.....	2	
Three toes for compound comminuted fracture.	1	
Reamputation:		
Finger for necrosis.....	2	
Leg for caries of tibia.....	1	
<b>OPERATIONS ON THE SKIN.....</b>		
For poisoned wound of hand.....	1	Plastic operation.
For ulcer of skin.....	6	Skin grafting; curetted, 2.
For frostbite.....	1	Skin grafting.
<b>UNCLASSIFIED.....</b>		
For hypertrophy of tonsils.....	17	
For onychia.....	2	Removal of tonsils.
For encysted bullet in abdominal wall.....	1	Removal of nail.
For gunshot wound of back.....	1	Removed bullet.
For necrosis of lumbar vertebra.....	1	Bullet removed.
For perineal fistula.....	1	Scraped and packed.
For bursitis.....	2	Radical cure.
For carbuncle of back.....	3	Incised and packed, aspirated, 1.
For caries of sternum.....	1	Incised and scraped.
For phagedæna of groin.....	1	Bone scraped.
For gunshot wound of neck.....	1	Curetted.
For scalp wound.....	1	Bullet removed.
For necrosis of rib.....	2	Sutured.
	4	Curetted, 2 unsuccessful; resection of rib (1), unsuccessful.

TABLE X.—RATIO OF DEATHS FROM SPECIFIC CAUSES.

Deaths from—	Per 100 from all causes.	Deaths from—	Per 100 from all causes.
General diseases.....	47. 70	Diseases of the digestive organs.....	8. 48
Diseases of the nervous system.....	5. 58	Diseases of the urinary system.....	5. 35
Diseases of the circulatory system.....	5. 58	Injuries.....	5. 58
Diseases of the respiratory system.....	16. 51	From all other causes.....	5. 57

TABLE XI.—RATIO OF DEATHS IN EACH DISTRICT.

Districts.	Per 100 patients treated in hospital.	Districts.	Per 100 patients treated in hospital.
North Atlantic.....	2. 36	The Mississippi.....	3. 99
Middle Atlantic.....	4. 17	The Great Lakes.....	2. 69
South Atlantic.....	4. 00	The Pacific.....	3. 70
The Gulf.....	2. 38	The quarantine stations.....	1. 32
The Ohio.....	2. 51		

**TABLE XII.—COMPARATIVE EXHIBIT—MORTALITY PER 100 PATIENTS TREATED IN HOSPITAL, BY DISTRICTS, 1885-1894.**

Districts.	General aver- age.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.
North Atlantic.....	2.94	3.95	3.09	3.04	3.53	3.25	2.65	2.50	2.62	2.46	2.36
Middle Atlantic.....	3.99	3.34	3.27	4.85	4.80	3.92	4.66	3.77	3.44	3.69	4.17
South Atlantic.....	3.24	3.05	3.54	3.53	2.54	3.55	3.64	2.56	2.71	3.37	4.00
The Gulf.....	3.17	2.49	2.96	3.82	2.78	3.08	3.40	3.88	3.63	3.29	2.38
The Ohio.....	2.59	2.43	3.05	3.06	2.01	3.52	2.26	2.54	1.53	3.01	2.51
The Mississippi.....	3.59	2.93	2.79	4.19	4.78	3.52	3.04	3.67	3.37	3.64	3.99
The Great Lakes.....	2.81	2.79	2.37	2.72	2.83	2.93	2.62	2.44	4.11	2.76	2.61
The Pacific.....	4.23	3.30	5.72	4.59	4.45	4.22	4.42	4.43	3.83	3.73	3.76

**TABLE XIII.—COMPARATIVE EXHIBIT—RATIO OF DEATHS FROM SPECIFIC CAUSES, 1885-1894.**

Deaths from—	General aver- age.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.
General diseases .....	47.43	46.61	48.40	45.63	46.58	45.47	50.20	52.66	43.42	47.70	47.70
Diseases of the—											
Nervous system.....	5.44	8.07	4.91	4.79	6.84	5.69	4.06	3.69	6.05	4.81	5.58
Circulatory system.....	8.42	10.42	9.09	7.29	10.04	7.58	5.81	9.84	9.60	8.99	5.58
Respiratory system.....	16.00	14.06	16.22	17.50	14.96	17.26	19.10	15.16	15.85	13.38	16.51
Digestive system.....	7.62	9.90	7.37	7.08	8.97	7.37	6.30	5.33	7.30	7.11	8.48
Urinary system.....	5.16	5.21	4.18	6.25	5.34	4.63	4.67	4.71	4.80	6.48	5.35
Injuries.....	6.26	3.39	5.41	7.92	4.50	8.00	5.81	5.33	7.72	8.99	5.58
From all other causes.....	3.73	2.34	4.42	3.54	2.77	4.00	3.65	3.28	5.26	2.54	5.57

**TABLE XIV.—COMPARATIVE EXHIBIT—AVERAGE DURATION OF TREATMENT IN HOSPITAL IN EACH DISTRICT, 1885-1894.**

Districts.	General aver- age.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.
North Atlantic.....	27.10	30.22	26.56	23.89	26.76	30.05	29.21	29.68	24.37	24.12	26.14
Middle Atlantic.....	26.51	25.32	25.84	29.21	26.90	26.92	26.32	26.81	26.87	26.29	24.60
South Atlantic.....	27.46	26.06	26.72	27.99	26.53	27.91	28.27	26.19	26.26	29.23	29.48
The Gulf.....	21.73	18.63	19.43	20.82	23.24	24.55	23.21	21.07	21.97	22.33	22.13
The Ohio.....	23.16	23.18	23.61	21.87	21.62	22.52	24.52	24.92	23.81	23.37	22.80
The Mississippi.....	21.20	20.28	20.79	21.72	21.23	22.60	20.88	22.61	20.59	19.84	21.51
The Great Lakes.....	29.58	28.10	28.61	26.31	26.72	29.69	30.82	27.09	27.82	27.07	28.32
The Pacific.....	30.98	31.09	29.74	29.72	29.96	31.12	33.68	32.68	36.92	40.27	43.57

TABLE XV.—STATEMENT OF MORTALITY OF PASSENGERS ON VOYAGES FROM FOREIGN PORTS TO THE UNITED STATES, JULY 1, 1893, TO JUNE 30, 1894.

Date.	Name of vessel.	Where from.	Sex.	Age.	Causes of death as reported to customs officer.
Nov. 23	Aller .....	Bremen .....	Male .....	35	Apoplexy.
Jan. 17	Amsterdam .....	Rotterdam .....	do .....	20	Phthisis.
Jan. 4	Belgravia .....	Mediterranean ports .....	do .....	61	Senile decay.
Jan. 25	Bohemia .....	Hamburg .....	Female .....	40	Paralysis of heart.
Apr. 14	Dania .....	do .....	do .....	61	Pneumonia.
Nov. 21	Dresden .....	Bremen .....	Male .....	47	Œdema of lung.
Nov. 24	do .....	do .....	do .....	47	Do.
Oct. 9	Havre .....	Bordeaux .....	do .....	52	Disappeared at seaport.
Oct. 18	Havel .....	Bremen .....	Female .....	8	Convulsions.
Feb. 7	Leibnitz .....	Rio Janeiro .....	Male .....	20	Intermittent fever.
Oct. 21	Marsala .....	Hamburg .....	Female .....	34	Eclampsia.
Nov. 13	Neckar .....	Bremen .....	do .....	60	Pneumonia.
Sept. 18	Nestorian .....	Glasgow .....	Male .....	48	Fatty degeneration of heart.
Dec. 16	Pennsylvania .....	Antwerp .....	Female .....	72	Pneumonia.
Feb. 7	Rugia .....	Liverpool .....	Male .....	45	Consumption.
Oct. 13	Russia .....	Hamburg .....	Female .....	18	Gastric enteritis.
Oct. 13	do .....	do .....	Male .....	15	Enteritis.
Apr. 17	St. Numidian .....	Liverpool .....	Female .....	45	Liver complaint.
Dec. 7	Stuttgart .....	Bremen .....	Male .....	60	Apoplexy.
Dec. 7	do .....	do .....	Female .....	31	Heart disease.
Dec. 7	do .....	do .....	do .....	30	Apoplexy.
Dec. 14	Tentonic .....	Liverpool .....	do .....	85	Exhaustion.
Jan. 23	Veendam .....	Rotterdam .....	Male .....	35	Cerebral hemorrhage.
May 19	Venetia .....	Stettin .....	do .....	37	Alcoholism.

TABLE XVI.—NATIVITY OF PATIENTS TREATED IN UNITED STATES MARINE HOSPITALS DURING THE PAST FISCAL YEAR.

Countries.	Number.	Countries.	Number.
Total .....	13,725	Japan .....	15
Africa .....	12	Mexico .....	13
Australia .....	10	New Zealand .....	12
Austria .....	29	Norway .....	800
Azore Islands .....	8	Philippine Islands .....	16
Canada .....	328	Poland .....	22
China .....	15	Portugal .....	32
Denmark .....	221	Prince Edward Island .....	20
England .....	602	Russia .....	69
Finland .....	212	Scotland .....	110
France .....	69	Spain .....	30
Germany .....	500	Sweden .....	520
Greece .....	20	Switzerland .....	25
Holland .....	50	United States of America .....	9,000
India .....	12	Wales .....	24
Ireland .....	800	West Indies .....	10
Italy .....	29	Unknown .....	90

## **PUBLIC HEALTH SERVICE.**

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It may be justly claimed that all the work of the Marine-Hospital Service as set forth in the foregoing pages pertains essentially to the public health, but the more direct efforts of the Service in this behalf may be described under the following heads:

1. Hygienic Laboratory of the Marine-Hospital Service.
2. Sanitary reports and statistics.
3. Sanitary inspection service.
4. The national quarantine stations.
5. Revision of maritime quarantine regulations.
6. Promulgation of interstate quarantine regulations.
7. Enforcement of quarantine regulations.
8. Relations of the national quarantine system to State and local quarantines.
9. Prevalence of cholera, yellow fever, smallpox, plague, and leprosy, and special efforts of the Service to prevent the introduction or spread of the same.

In general, it may be said that, while cholera had materially diminished in foreign countries, it was nevertheless deemed necessary to maintain an officer in Europe, who visited various ports and places for the purpose of keeping the Bureau accurately informed.

Unusual precautions were taken to prevent the introduction of yellow fever and to prevent the spread of smallpox, the details of which will be found under appropriate headings.

Sanitary inspections were maintained in certain foreign ports, and a systematic inspection of all the local quarantines of the United States was inaugurated and successfully conducted; the national quarantine stations were successfully operated, and an unusually large number of cases of yellow fever were caught and held at these sanitary outposts; sanitary reports were transmitted weekly to health officers at home and abroad; the maritime quarantine regulations, both for foreign and domestic ports, were revised, materially improved, and made less onerous to commerce without loss of efficiency; interstate quarantine regulations, under the act of Congress of February 15, 1893, were prepared and promulgated; and finally the Hygienic Laboratory was utilized for determining at critical periods the infectious or innocent character of suspected cases, and in the scientific investigation into the causes and prevention of disease.

## HYGIENIC LABORATORY.

Following is the report of the medical officer in charge of the Hygienic Laboratory of the Marine-Hospital Service for the fiscal year 1894. It is proposed to detail from time to time officers of the Service to assist in laboratory work and for their instruction in bacteriological diagnosis of contagious diseases and scientific investigation of their causes and means of prevention. Passed Assistant Surgeon Kinyoun at the present writing is abroad under orders. After completion of his service as delegate to the International Congress of Hygiene and Demography at Budapest he will visit the various laboratories in Italy, Germany, and France to familiarize himself with the latest advances in serum therapy. This officer has transmitted to the Bureau a supply of diphtheria toxin from the Pasteur laboratory in Paris, with which animal immunization has already been begun, a horse having been purchased by the Bureau for the purpose of obtaining an antitoxic serum for the cure and prevention of diphtheria. On his return it is expected that the methods of preparing the toxin and obtaining the diphtheria antitoxin from the immunized animal will be demonstrated to State health officers and others in order that the benefits of this new remedy for diphtheria may be as widely distributed as possible.

TREASURY DEPARTMENT,  
MARINE-HOSPITAL SERVICE, HYGIENIC LABORATORY,  
*Washington, D. C., August 13, 1894.*

SIR: I have the honor to submit a short report on the operations of the laboratory for the past year, ending June 30, 1894.

On account of duties devolving upon me in connection with the exhibits of the Marine-Hospital Service at the World's Columbian Exposition, the quarantine service, and the preparation of plans for improved disinfecting apparatus, there was some intermission in the work of the laboratory during the summer of 1893; notwithstanding, considerable has been accomplished.

In 1893 several specimens which were from suspected cases of cholera were examined to determine their true character. They were specimens from cases on the steamship *Karamania*, the steamship *Russia*, a vessel from Poti, and from the suspected case in Jersey City. The results of these examinations showed conclusively that the cases on the *Karamania*, the *Russia*, and the case in Jersey City were genuine Asiatic cholera; the case on the vessel from Poti was one of acute dysentery.

An examination was also made during this time of a specimen from a case of supposed yellow fever in Pensacola, a report of which has been published. Bacteriological analyses by request of different health officers, have been made from time to time of samples of water from suspected sources, with a view to determining whether the water has been contaminated with sewage or fecal bacteria.

During the winter, at the request of the chairman of the Committee on Ventilation and Acoustics, Hon. G. W. Shell, an examination was made of the ventilation of the Hall of Representatives. A full report was rendered thereon and printed in the proceedings of Congress, vide House Report No. 853, Fifty-third Congress, second session.

Bacteriological examinations have been conducted for the health department of the District of Columbia throughout the past year. The majority of these pertain to the condition of the water of wells located in the city limits. About 90 per cent of all examined were found contaminated with sewage.

A systematic course of instruction in bacteriology was instituted during the winter. Four officers of the Service, under orders from yourself, have availed themselves of the course.

In addition to the above work investigations have been made and are now being continued concerning the etiology and pathology of the eruptive fevers and in preventive inoculations against the acute infectious diseases. A separate report upon these latter will be made in the near future.

Respectfully, yours,

J. J. KINYOUN,

*Passed Assistant Surgeon, Marine-Hospital Service.*

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,

*Washington, D. C.*

#### REPORT ON THE AIR OF THE HOUSE OF REPRESENTATIVES.

TREASURY DEPARTMENT,  
OFFICE OF THE SUPERVISING SURGEON-GENERAL,  
MARINE-HOSPITAL SERVICE,  
*Washington, D. C., April 14, 1894.*

SIR: Agreeably to your request for a further report on the ventilation of the House of Representatives, and that an examination should be made of the air for impurities deleterious to health, I have the honor to submit the following for your consideration:

In a preliminary report made to you on April 16, by Mr. H. Adams, of the Supervising Architect's Office, and myself, certain data concerning the analysis of the air were inclosed. Some parts of these are incorporated in this report.

For the purpose of determining whether there was an appreciable difference between the air of the Hall and that of outside, inspections were made of the several parts of the building at irregular times and intervals, and it was apparent from the commencement that there was a decided difference in the air as soon as it entered the Hall. This condition varied considerably at times in degree. Chemical analyses were also made from time to time to determine the nature and quantity of these additions to the air. Qualitative tests revealed that the principal impurities were carbon dioxide, illuminating gas, ammonia, and organic matter in suspension, and other substances not classified. As carbon dioxide is considered as the index for impurities present in the atmosphere of living rooms, analyses were instituted to determine the quantity in a given volume of air.

The air in passing through the air duct to the Hall gains a slight amount of carbon dioxide—about 1 part per 10,000—so small in amount that it is hardly worth considering. The amount of carbon dioxide present in the Hall of Representatives was never found to be in large quantities, but was variable, and never in proportion to the odors usually present.

The following table, setting forth the amounts of carbon dioxide per 10,000 parts, will perhaps give a better idea:

Date.	CO <sub>2</sub> .		Remarks.
	Air outside.	Main Hall.	
February 18 .....	.....	7.50	Sunday, Hall closed, ventilating machinery stopped.
February 24 .....	3.35	5.40	House in session, 300 persons present 2 p. m.
March 6 .....	3.93	4.20	House in session, 400 persons present 3 p. m.
March 9 .....	.....	5.34	House in session, 200 persons present 2 p. m.
March 12 .....	4.03	7.00	House in session, 400 persons present 4 p. m.
March 14 .....	4.205	4.24	House in session, 200 persons present 3 p. m.
March 23 .....	.....	11.394	House in session, 800 persons present 2 p. m.
March 29 .....	.....	3.54	House in session, 500 persons present 12.30 p. m.
March 31 .....	.....	11.01	Sunday, Hall closed 11.30 a. m.

It would appear from the above table that the carbon dioxide increases in a ratio with the number of persons present and the length of time occupied. When the ventilating machinery is stopped and the building closed the amount is increased. The amount of carbon dioxide was, as a rule, increased over the amount found on the floor, the largest quantity being 5.76 parts per 10,000 and the lowest 2.33 parts. Samples of air taken from the exit over the ceiling of the Hall at the same time as those from the floor of the Hall give the following:

Date.	CO <sub>2</sub> (parts per 10,000).
February 18 .....	5.76
March 9 .....	5.54
March 12 .....	5.36
March 23 .....	5.65
March 29 .....	2.33

The percentage of carbon dioxide was found to be present in larger quantities in the cellar than in the other parts of the building, although not in amount which one would suppose from the strong, pungent, disagreeable odors which are always present. The largest amount was 15.39 parts per 10,000 and the lowest 4.65 parts per 10,000. The amount of carbon dioxide in the cellar varied considerably, according to the direction of the wind. If from the north and west, there was very little present in the different parts, save the northeast portion near the elevator shaft. This increase of carbon dioxide can be explained by the fact that the outside currents, passing in through the west and northwest sides, tend to concentrate the impure air in this particular locality.

The origin of the carbon dioxide is not from persons, but arises from one or all of the following sources: From the boiler room, from the decomposing matters in the several parts of the cellar and terrace rooms, where large quantities of stationery, etc., are stored, and from the kitchen. The corridors of the basement contain carbon dioxide in considerable quantities, especially at two or three places—over the main stairways, from the elevator shaft on the east side, and from the small stairway on the west side. The cellar air at these places is drawn up to the basement, where it partly diffuses through the basement windows, and ascends to other parts of the building.

Samples of air taken from over the west main stairway gave 15.39 parts of carbon dioxide per 10,000, while at the east stairway only 4 parts were found.

This condition is partly explained by reason of the fact that the ventilation of the corridors is accomplished by means of fans, which aspirate the air from the corridors, and the louvers are directly over the stairways.

On the west side of the Hall, in the basement, is a small stairway communicating with the cellar. There is no way provided for closing this entrance to the cellar, and here at all times there is a strong current of air passing into the basement corridors from the cellar, which, in the main, passes upward to the other parts of the building by the main stairway elevator shaft.

The amount of carbon dioxide found in the Speaker's lobby was variable, depending largely on the number of persons occupying it and the length of time the persons were smoking. The highest percentage was 11.10 per 10,000 and the lowest 4.025 parts per 10,000.

The cellar air finds its way into this part of the Hall also, and comes principally through stairways connecting the lobby with the basement.

The system by which the lobby is ventilated is by means of registers, which are for superheating the air. The ventilation of this part is poor; especially is this so in winter.

## AMMONIA.

The quantity of ammonia in the different parts of the building shows a decided increase over the amount in the outside air, showing about the same ratio as that of the carbon dioxide. The following observations will show the amount of this substance (approximately) found in the air:

Date	Per cubic meter.		
	Outside air.	In Hall.	In basement.
	<i>Millig.</i>	<i>Millig.</i>	<i>Millig.</i>
March 6 .....	0.0150	0.01522	.....
March 9 .....	.0152	.0160	.....
March 14 .....	.0150	.0200	0.0300
March 29 .....	.0150	.0200	.0885

It appears that the greatest amount comes from the cellar air, a part of which contaminates the air of the basement, and, remotely, the atmosphere of the Hall.

The ammonia in the Hall represents at least three sources of origin: From the respiration, from the cellar and basement, and from the decomposing substances on the floor and gratings, especially from the latter, because the air is made to filter through the filth before it gains entrance into the Hall.

## ILLUMINATING GAS.

Small quantities of illuminating gas have been found present in the several parts of the building, at times existing only as a trace, at other times in quantities appreciable to the senses. Especially was this so when the building had been closed for a considerable time and no artificial ventilation carried on. Illuminating gas was detected in the Hall of the House while that body was in session, but it existed only in minute quantities. Whether it had its origin from a leaky burner in the cloak rooms or from the gas fixtures above the ceiling could not be definitely determined, but the inference was that it came from the latter. On February 18 (Sunday) samples of air were collected in the Hall for analysis. One taken near the ceiling contained one part per 1,000 of illuminating gas, and that taken from the floor about one-half part per 1,000. On March 25 the experiment was repeated under the same conditions, and gave 1.75 parts per 1,000 near the ceiling and 0.75 part on the floor, showing conclusively that the gas came from over the ceiling.

There are leaky gas pipes in other parts of the building, especially in the cellar. In one instance 0.7 part per 1,000 was detected, the quantity of gas present depending upon how long the building had been closed and the ventilating machinery stopped.

In addition to the gaseous impurities present and already referred to there are others which no attempt has been made to classify. These are the nauseating, musty odors existing in the cellar air. These are held in suspension by the atmosphere, and are drawn upward by the air currents to other portions of the building.

The cellar air in the rooms of the terrace is the worst contaminated. The impurities are derived from the vast quantities of tools, stationery, rubbish, wood, etc., with which these rooms are filled. On account of the dampness these materials are undergoing decomposition to a greater or lesser degree, and furnish the bulk of the contamination. This condition is augmented by the odors coming from the kitchen. These latter, which in themselves may not be a menace to health, are anything but pleasant to experience.

Samples of air collected at various places in the cellar demonstrate that the impurities were in great part organic matter in suspension, on account of the air yielding a large quantity of "albuminoid ammonia."

The condition of the atmosphere in these parts is not in any way improved by the location of the water-closets and bathroom in the southeast corner. The ventilation of these is defective, depending to a great extent upon the elevator shaft and



small stairway. This impure air, coming from the cellar, naturally finds an exit through the stairways and elevator shafts to the corridors of the basement and Hall. A part of this escapes by the ventilating apparatus over each of the main stairways, and some finds its way into the Hall through the many openings. To what extent the air from this source passes into the Hall has not been definitely determined, but it is considerable, and adds not a little to the impurities in the atmosphere.

The Hall proper is ventilated by a system which, in theory, should supply a sufficient quantity of fresh air to the Hall. The method of introducing the air in the floor is exceedingly faulty, and is open to serious objections.

The organic matter which accumulates on the floor is in great part brought in direct contact with the air current as it enters the Hall.

The gratings through which the air enters are so located and constructed that they become ideal dirt traps. Further, on account of the size and form of the open-work in the gratings, it is almost an impossibility to keep them clean. The dirt also falls through the gratings to the space beneath the floor, where it is subjected to the same influences as if on the gratings.

The dirt, etc., which accumulates on the floor is of a complex nature, both as to the materials which compose it and the odors which it evolves. The sweepings collected from time to time have shown on examination a little of everything—dirt from the street, dust, tobacco, food, fruit, nuts, paper, expectoration, and bacteria.

This filth is subjected to the air current, which acts as a distilling process, setting free the complex odors, also holding it in suspension and carrying it up in to the Hall.

This condition of affairs constantly exists, but is worse at times than others, especially when the gratings are not kept clean, or when the dirt and filth under the floor is allowed to remain for some time.

What is said of the gratings can also be applied to the carpet. This is not in the best condition. In some places it is saturated with tobacco expectoration, a condition which tends to make it none the less odorous.

The same conditions exist in the galleries, although to a lesser degree than on the floor of the Hall, except in the gallery opposite the Speaker's desk, where it is worse, odors of tobacco, etc., being always prominent. When the galleries are filled—the main gallery particularly—the odors above referred to are augmented by others, emanating from those persons who are never in the state next to godliness—the vagabonds who congregate in this gallery during the winter months for the sole purpose of keeping warm. This is an important factor in contaminating the air on the floor. The effluvium from this source, a part of it at least, is carried down toward the floor by currents of air from the corridors, entering the doors of the gallery.

The air is further vitiated by persons smoking. The contamination of the air of the Hall from this source is apparent to all.

In the foregoing an attempt is made to show how much the air in the several parts of the building deviates from the normal, and to point out the most prominent factors of the change.

While the amount of carbon dioxide has never, save in a few instances, been found to be in excess of the admissible quantity, there are other impurities in addition to that of carbon dioxide which may be deleterious to health. Illuminating gas at times is present in large quantities. Free ammonia and nitrogenous matters are in excess of the quantities normally present in the atmosphere of a well-ventilated room.

How to remedy these defects in the system of ventilation of the Hall is a serious question to decide, and it becomes more so when all the facts relating thereto are taken into consideration.

There are three separate systems of ventilation of the building: (1) For the Hall; (2) for the basement, Speaker's lobby, and corridors, and (3) for the cellar and terrace.

The ventilation of the Hall differs from the others in many particulars. These will not be considered in detail, because they will be discussed thoroughly by Mr. Henry

Adams. The objection which can be urged against this system is the fact of the air being already more or less contaminated by the dirt, etc., of the floor.

In the basement, the Speaker's lobby, and corridors there is an indirect system of heating and ventilating. This is open to serious objection on account of the undue heating of the air during winter, and if the requisite amount of air be supplied the heat is intolerable. In summer the air current is concentrated and is unpleasant.

The cellar ventilation is exceedingly poor. It appears that it was the intention to have the foul air from this locality drawn out by the draft of the furnace flues, but practically a very small proportion is disposed of in this way. In the corridors of the cellar run the numerous steam and hot-water pipes, which tend to heat the air, and it, being thus heated, seeks a higher level. This will in part account for the strong currents of air encountered at the communications between the cellar and basement, etc.

In the terrace rooms on the south side are two wing fans. These are for the purpose of keeping the air circulating among the large quantity of books and stationery, to prevent the formation of mold, etc. While they doubtless serve this purpose, in the prevention of mold, they are the cause of the contamination of the air of the cellar, because the air set in motion by them is surcharged with organic matter, arising from books, paper, rubbish and wood, etc., which is further diffused to all parts of the building. It can be readily seen that this is no small matter.

The ventilation provided for the kitchen is ample, and if the proper measures are carried out there should be no cause for complaint concerning the odors emanating therefrom.

To meet these defects in the ventilation so far as possible, until a better system can be devised, a few suggestions might not be amiss:

(1) The cellar air should be prevented from gaining access to the basement. This can be done without entailing a great expense.

(2) The water-closets and bathrooms should have an independent ventilation.

(3) The building should be properly policed in all its parts. This is not done as it should be; especially is this so in the Hall.

The gratings in the floor are not kept clean; only those that are prominently visible. Dirt and filth should be promptly removed from the floor and under the floor. A sanitary inspection should be made of all parts of the building, and always kept clean.

Any change looking to the betterment of the ventilation of the Hall must take all other parts of the building into consideration. Adequate facilities for a supply of fresh air should be made for the cellar as for the Hall. To do this it may not be necessary to supply the same number of cubic feet to all parts, but enough should be supplied to remove the impurities as fast as they arise.

The ventilation of the Hall can be improved over the system in vogue at the commencement of this examination by allowing the building to be supplied with fresh air during the nights. It has been suggested that the ventilating machinery be run continuously, especially during the cold weather, when all the parts of the building are kept closed.

The system of lighting the Hall is open to a serious objection—the escape of gas from the numerous gas jets over the ceiling. The electric-light plant should be enlarged sufficiently to supply all parts of the building with electric lighting. This alone will add much to the sanitary condition of the several portions of the building.

No suggestions of any consequence have been made in this report looking to any radical change in the existing plant. This will be thoroughly considered by Mr. Henry Adams, heating and ventilating engineer, of the Supervising Architect's Office.

Respectfully submitted.

J. J. KINYOUN,

*Passed Assistant Surgeon, Marine-Hospital Service.*

Hon. G. W. SHELL,

*Chairman Committee on Ventilation, House of Representatives.*

*(Through the Surgeon-General of the Marine-Hospital Service.)*

## DIVISION OF SANITARY REPORTS AND STATISTICS.

A medical officer is in charge of this division of the Bureau, and each week an edition of 1,800 abstracts of sanitary reports has been issued and transmitted to all quarantine officers of the United States, to State and local boards of health, collectors of customs, and to consular officers abroad. These abstracts at the end of the calendar year are bound, making a volume of about 1,300 octavo pages. The first part of each abstract is devoted to information relative to the United States, containing special reports upon the presence of epidemic disease or upon the sanitary condition of ports and places, reports received from the various quarantine stations and from the several ports where immigrants arrive, showing the name of the vessel, date of arrival, port of departure, the number of immigrants aboard, and the number of said immigrants coming from suspected or infected localities. Condensed tables are included showing the prevalence of smallpox or any other epidemic disease throughout the United States. Also special yearly and monthly reports of States and cities; a weekly statistical mortality table of 120 cities of the United States, and a weekly table of temperature and rainfall for said cities received from the Department of Agriculture.

Following is a comparative mortality table of certain cities of the United States for the year ended December 31, 1893, compiled in the division of sanitary reports and statistics from reports received at the Bureau:

MORTALITY TABLE, CITIES OF THE UNITED STATES, 1893.

Cities.	Popula- tion, Uni- ted States census 1890.	Total deaths from all causes.	Annual rate per 1,000 of the popu- lation.	Cities.	Popula- tion, Uni- ted States census, 1890.	Total deaths from all causes.	Annual rate per 1,000 of the popu- lation.
Altoona, Pa. ....	30,337	682	22.5	Nashville, Tenn. ....	76,168	1,535	20.2
Auburn, N. Y. ....	25,858	521	20.1	Newark, N. J. ....	181,830	4,880	26.8
Baltimore, Md. ....	434,439	6,821	15.7	New Orleans, La. ....	242,039	6,989	28.9
Binghamton, N. Y. ....	35,005	622	17.8	New York, N. Y. ....	1,515,301	44,497	29.4
Boston, Mass. ....	448,477	11,640	25.9	Northampton, Mass. ....	14,990	302	20.1
Brooklyn, N. Y. ....	806,343	20,924	25.9	Omaha, Nebr. ....	140,452	2,203	15.6
Chicago, Ill. ....	1,099,850	27,156	24.7	Pensacola, Fla. ....	11,750	242	20.6
Cincinnati, Ohio. ....	296,908	5,887	19.8	Philadelphia, Pa. ....	1,046,964	23,694	22.6
Cleveland, Ohio. ....	261,353	5,240	20	Portland, Me. ....	36,425	722	19.8
Detroit, Mich. ....	205,876	4,123	20	Providence, R. I. ....	132,146	3,246	24.6
Dubuque, Iowa. ....	30,311	426	14.1	Richmond, Va. ....	81,388	2,064	25.4
Erie, Pa. ....	40,634	710	17.4	Rochester, N. Y. ....	133,896	2,588	19.3
Fall River, Mass. ....	74,398	1,738	23.4	Sacramento, Cal. ....	26,386	438	16.6
Galveston, Tex. ....	29,084	604	20.8	San Diego, Cal. ....	16,159	157	9.7
Indianapolis, Ind. ....	105,436	2,108	19.9	San Francisco, Cal. ....	298,997	5,942	19.9
Keokuk, Iowa. ....	14,101	222	15.8	Toledo, Ohio. ....	81,434	1,466	18
Los Angeles, Cal. ....	50,395	995	19.7	Washington, D. C. ....	230,392	6,131	26.6
Milwaukee, Wis. ....	204,468	4,327	21.2	Williamsport, Pa. ....	27,132	341	12.6
Minneapolis, Minn. ....	164,738	2,223	13.5	Winona, Minn. ....	18,208	262	14.4
Mobile, Ala. ....	31,076	823	26.5				

The second part of the abstract is devoted to foreign news of a sanitary character, including a condensed table showing the presence of cholera and yellow fever throughout the world as reported to the Bureau; special reports from consuls, medical officers, and sanitary inspectors, arranged according to countries; statistical tables, and a weekly mortality table of about 120 cities.

## SANITARY INSPECTION SERVICE.

As previously stated, the regular officers of the Marine-Hospital Service, eleven in number, detailed by the President to serve in the offices of the consuls in foreign ports during the cholera season of 1893, were recalled November 30, with the exception of one surgeon.

The services of sixteen sanitary inspectors, temporarily appointed in foreign ports during the same season to assist the medical officers, were also discontinued by November 30.

In general it may be stated that it was deemed unnecessary during the past year to maintain medical officers in the offices of consuls at foreign ports. The presence of these officers in the year previous had given the proper impulse to the sanitary work necessary, and it was believed that the consuls themselves were able to enforce the provisions which are required, as set forth in the bill of health which they are obliged to sign. Surg. Fairfax Irwin, however, was kept abroad, as has been previously stated, and transmitted accurate information both with regard to the prevalence of cholera and other diseases and any additional necessary precautions to be taken. The reports, made weekly, were published in the abstract. His itinerary was as follows:

On January 15, 1894, being then on duty in London, Surgeon Irwin was ordered to proceed to St. Petersburg, for the purpose of observing the progress of the cholera epidemic in the Empire and furnishing early information to the Government as to its spread. En route he was in Vienna from the 18th to the 23d of January, for the purpose of consulting with the consul-general as to cholera in Galicia. He arrived in St. Petersburg on the 26th of the same month. Having been ordered to Paris in connection with the meeting of the International Sanitary Conference, Surgeon Irwin arrived in that city on March 4, where he remained until April 25.

April 26 he was transferred to Vienna, owing to the threatening aspect of the epidemic of cholera in Galicia.

On May 7 he proceeded to Budapest for further information, and from there, on the 13th, was ordered to Berlin, at which point it was found that general information as to the spread of the epidemic was more easily obtainable than elsewhere. This officer remained in Berlin until August 2, and was then ordered to Rotterdam owing to certain reports which had been made as to the inefficacy of examination of emigrants at that port.

From Rotterdam he returned to Brussels in order to obtain information as to the progress of cholera in Liege and the towns along the Meuse.

On August 12 Surgeon Irwin arrived in England, having been ordered to inspect the various ports of Great Britain with a view to obtaining information as to the methods pursued by the steamship companies as to the examination of emigrants and the disinfection of luggage. For this purpose he was in Southampton August 13; Hull, August 15; Liverpool, August 16 to 19; Glasgow, August 20 to 27; Queenstown, August 29 to 30, and returned to London September 1. He was ordered to return to the United States, and arrived in this country November 3.

Sanitary inspectors were maintained throughout the year in the Cuban ports of Havana, Cienfuegos, and Santiago; also in Rio de Janeiro, on the Isthmus of Panama, and at Yokohama.

In the United States temporary sanitary inspectors, nine in number, were employed at Chicago during the prevalence of smallpox for the inspection of outgoing vessels and vaccination of the crews, and two for the same purpose at Detroit, Mich. Inspectors were also stationed at El Paso and Eagle Pass, Tex., and Nogales, Ariz., to inspect trains from Mexico on account of smallpox and yellow fever. Under this head, also, may be properly mentioned the division of the Atlantic, Gulf, and Pacific coasts into ten districts, in each of which a regular medical officer of the Marine-Hospital Service was detailed to inspect, periodically, every quarantine station and port of entry.

In May, a sanitary inspector, an expert in the diagnosis of yellow fever, was appointed to visit the different seaport cities of the Southern States, with a view to studying the diseases which usually give rise to questions of diagnosis in the beginning of epidemics, in order that the Bureau might be promptly informed of any suspected outbreak of the disease. A careful examination of the mortuary records of the cities of Baltimore, Norfolk, Wilmington, Charleston, Savannah, Jacksonville, Key West, Tampa, and Mobile was made, and in none of them was there found any suspicion of the existence of yellow fever, a conclusion that was verified by the freedom from this disease during the ensuing season. This inspection was deemed necessary because of the epidemic of yellow fever in Brunswick, Ga., the previous year. A full description of the method employed will be found in a subjoined article on the prevention of the spread of yellow fever.

## NATIONAL QUARANTINE STATIONS.

Following are the reports in detail of the operations of the national quarantine stations, arranged according to location, from the most northern station on the Atlantic Coast to the most northern on the Pacific, enumerated as follows: Camp Low Quarantine, Sandy Hook, New Jersey; Delaware Breakwater Quarantine, near Cape Henlopen, at the entrance of Delaware Bay; Reedy Island Quarantine, near Port Penn, Del., and about 45 miles from Philadelphia, and 50 miles from the mouth of the bay; Cape Charles Quarantine, the boarding station near Old Point Comfort, Va.; detention barracks, hospitals, and disinfecting plant on Fishermans Island, off Cape Charles, Virginia; South Atlantic Quarantine, Blackbeard Island, Sapelo Sound, Georgia; Brunswick Quarantine, Brunswick, Ga.; Key West Quarantine, Dry Tortugas, Florida; Gulf Quarantine, Ship Island, Mississippi; San Diego Quarantine, San Diego, Cal.; San Francisco Quarantine, Angel Island, San Francisco Bay, California; Port Townsend Quarantine, boarding station at Port Townsend, barracks, hospital, disinfecting plant at Diamond Point, Washington.

### CAMP LOW QUARANTINE, SANDY HOOK, NEW JERSEY.

The operations of the quarantine service at Camp Low during the fiscal year ended June 30, 1894, were confined to the care and preservation of the buildings and contents. A steward and four attendants to guard the valuable property owned by the Service have been on constant duty. A naphtha launch has been provided for the purpose of conveying supplies; all the machinery has been well oiled and painted, including the engines, boilers, steam disinfectors, laundry, and electric plant, and all other property carefully guarded.

For a full description of this quarantine establishment and the circumstances under which it was created reference is made to the annual reports of 1892 and 1893. Although no active operations have been carried on, it has been deemed advisable to preserve this station intact and ready for use should demand be made upon it.

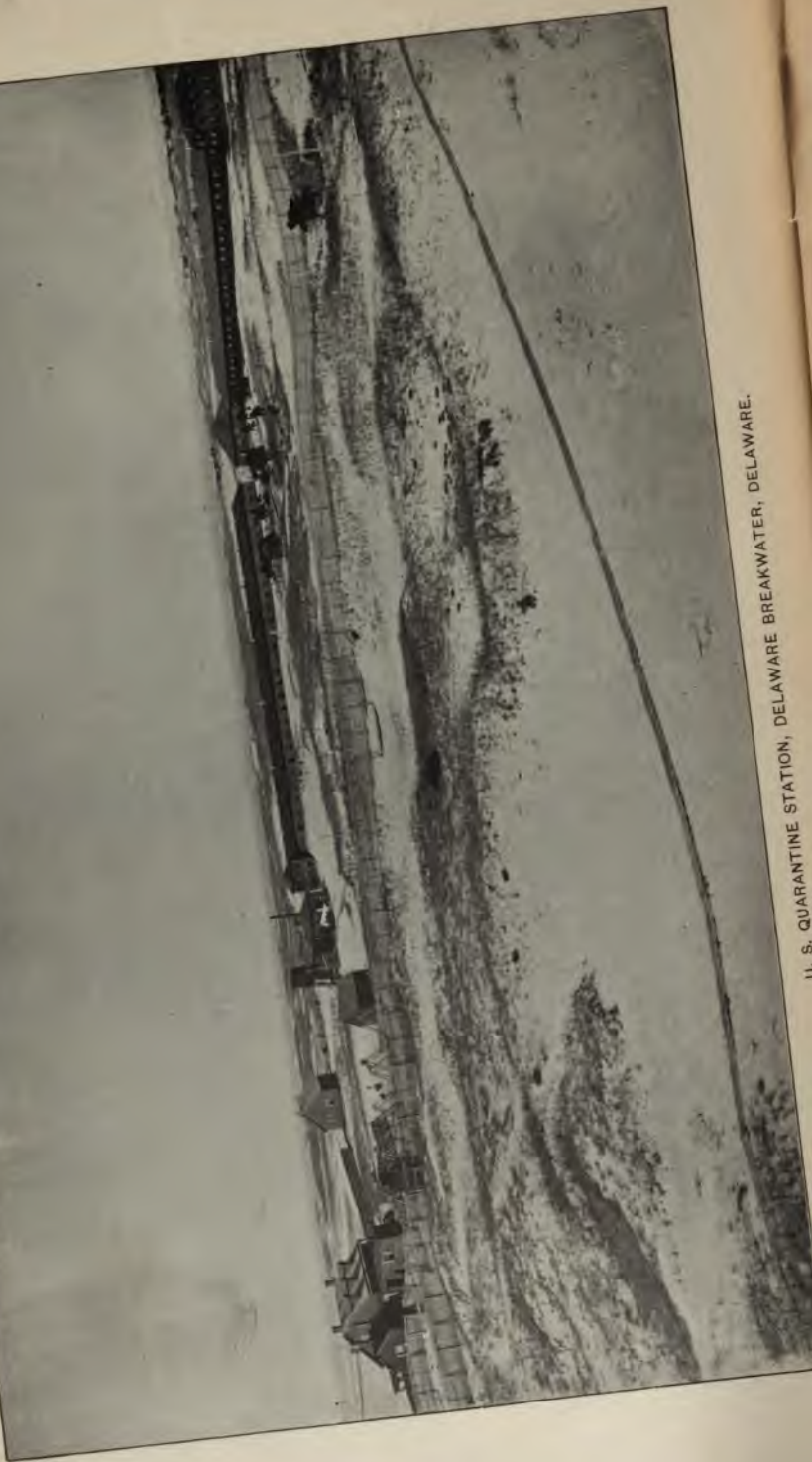
### DELAWARE BREAKWATER QUARANTINE; POST-OFFICE ADDRESS, LEWES, DEL.

From November 30, 1893, to November 30, 1894, 101 vessels were inspected and passed, and 7 vessels were sent to Reedy Island Quarantine Station.





Marine Hospital Report, 1804.



U. S. QUARANTINE STATION, DELAWARE BREAKWATER, DELAWARE.

On the above infected vessels there had been one death from yellow fever at Rio de Janeiro, and one death from smallpox at sea. Three cases of smallpox were taken off at this quarantine station.

A full description of the station will be found in the annual reports of 1892 and 1893. P. A. Surg. H. D. Geddings was in command from July 1 to September 14, 1893, from which latter date until June 1, 1894, the station was in charge of Acting Asst. Surg. W. P. Orr. P. A. Surg. W. D. Bratton assumed command June 1, 1894, and was relieved on account of physical disability August 27, 1894, by P. A. Surg. C. P. Wertenbaker. The following estimates have been prepared for the ensuing fiscal year:

Naphtha launch for boarding vessels.....	\$4,000
Barracks for cabin passengers.....	4,000
New boathouse.....	75
Lavatories to barracks and connecting kitchen sink to sewer.....	600
Improvement to grounds, grading, planting trees, etc.....	500
<b>Total .....</b>	<b>9,175</b>

**REPORT OF OPERATIONS OF THE QUARANTINE SERVICE AT THE DELAWARE BREAK-WATER STATION DURING THE FISCAL YEAR ENDED JUNE 30, 1894.**

By P. A. Surg. W. D. BRATTON, Marine-Hospital Service.

On the 1st day of July, 1893, P. A. Surg. H. D. Geddings assumed command of the station, relieving Acting Asst. Surg. W. P. Orr. He pushed the various works of construction and repair then under way, suggested others, supervised sinking of artesian well, and exerted himself to prepare the station for emergency call. Was in command also of the Reedy Island Station until August 30, when P. A. Surg. A. H. Glennan assumed command of that station and it began independent operations. Dr. Geddings likewise instituted complaints with a view to proceedings against neighboring fish-oil works as nuisances imperiling successful operations at this station. September 14 he was ordered to take charge of the detention camp near Brunswick, Ga., and Acting Assistant Surgeon Orr was left in command.

October 19, disinfecting barge *Zamora* sent to Wilmington, and laid up in winter quarters, under Bureau orders.

October 26, under similar orders, steamer *Pasteur* was sent to Wilmington, Del., for winter quarters, crew discharged, and pilot retained as watchman.

November 8 a severe gale washed away the northeast corner of quarantine inclosure, with part of infectious disease camp, threatening also the pesthouse, and officer in command immediately recommended measures to check further destruction.

November 20 steamer *Foster* ordered by Bureau to Reedy Island. On the 25th further orders were received to inspect during winter months only those vessels having had cases of contagious disease on board during voyage. This continued to be the rule until orders were received in June, 1894, to inspect all vessels calling here for orders.

December 11, 1893, steward was ordered away, and on January 8, 1894, three attendants were discharged.

June 1, 1894, P. A. Surg. W. D. Bratton assumed command of the station. A few days later the Bureau authorized the inspection here of a list of about twenty-five fruit steamers, which might pass the Reedy Island Station at night, en route to Philadelphia. During the year, June 30, 1893, to June 30, 1894, 306 vessels were inspected, 14 were disinfected, and 3 cases of smallpox treated in hospital. The number will

be much greater hereafter when all vessels calling for orders shall be inspected. No steamer has been sent to the station since November 20, 1893, and the work of boarding can not properly be done without one.

STATEMENT OF REPAIRS AND ALTERATIONS MADE AT DELAWARE BREAKWATER  
QUARANTINE STATION DURING FISCAL YEAR ENDED JUNE 30, 1894.

By P. A. Surg. W. D. BRATTON.

A water tower and tank were erected; bath house and laundry and boiler house built and equipped with boiler, pump, etc.; artesian well was sunk 400 feet; pump and water pipes laid to various buildings and barracks; disinfecting chamber installed in boiler room; addition of several rooms built to steward's quarters; flag-staff erected on grounds in place of that on executive building; 300 yards wire netting purchased for windows of the various buildings; sewer pipe from bath house and laundry laid to low water; extension made of hospital sewer to beach, and the same repaired; minor repairs made to hospital and executive building; bath, etc., added to latter; barracks kitchen equipped with ranges, etc.; more plank walks constructed; 12 latrines made.

Barge *Zamora*, blown ashore, was hauled back afloat; there were various repairs to machinery, cooking stoves, and disinfecting chamber in steamer *Pasteur*, and on the steamer *Foster*; a lifeboat was purchased for steamer *Pasteur*; a clinker-built cedar boat for the *Foster*.

At Reedy Island two disinfecting chambers, purchased under contract, were installed, with boiler, sulphur chambers, etc.; plant complete.

SPECIAL REPORT UPON THE PROTECTION AND PRESERVATION OF THE RESERVATION,  
DELAWARE BREAKWATER QUARANTINE.

UNITED STATES MARINE-HOSPITAL SERVICE,  
DELAWARE BREAKWATER QUARANTINE STATION, DELAWARE,  
October 13, 1894.

GENERAL: I have the honor to report that I received yesterday a telegram from the Supervising Architect authorizing the acceptance of the contract of William Virden to put in piling in front of pesthouse. Work will commence in a few days, as soon as the materials can be brought to the station. I wish also to report that with the additional force of three men employed October 1, 1894, a great deal of good work has been done. Aside from getting in over 60 tons of coal and filling every bin on the station to overflowing, the corners of buildings that were being undermined by the wind have been filled in and graveled; necessary repairs to buildings and grounds have been commenced; 32 willow cuttings have been set out, to be followed by cuttings of cottonwood, maple, and poplar. No grass seed is yet procurable, hence nothing can be done in that direction. There is still a vast amount of work to be done here. The sand is piling up against the barracks and blowing in through the cracks. This must be removed and the cracks closed.

It is my purpose to move this sand as fast as possible, and haul gravel to hold it in place, thus putting an end to what has been heretofore an endless task of moving the sand after every storm. If I am given my present force during the winter I guarantee that by the opening of the quarantine season the grounds of this station will be leveled, and graded, and graveled, and will not only present a handsome appearance but will save many hundreds of dollars, caused by labor to keep them in place unless they are graded and graveled. With my present force I can accomplish this at no extra expense. In this connection I may mention that I have been trying the experiment of building light sand breaks of wood across the hollows cut out by the wind and find that they are acting admirably in causing the sand to fill up these hollows, and as soon as they are filled they are graded and graveled. I am also trying to make the wind cut down sand hills and carry them where they are needed.

Marine Hospital Report, 1894.



U. S. QUARANTINE STATION, DELAWARE BREAKWATER, DELAWARE—EXECUTIVE BUILDING AND OFFICER'S QUARTERS.



I make these reports in order that the experiment may be tried at some of our reservations, such as Fisherman's Island, where the conditions are similar to the breakwater.

Respectfully, yours,

C. P. WERTENBAKER,

*Passed Assistant Surgeon, Marine-Hospital Service, in Command.*

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,

*Washington, D. C.*

A standing menace to the efficiency of this quarantine station is the large swarms of flies attracted by two fish-oil factories in the vicinity. Efforts have been made to dislodge these factories, which are not only a nuisance by reason of the great stench arising therefrom, both to the citizens of Lewes, Del., 2 miles distant, and to the quarantine station, one-quarter to one-half mile distant, but a source of danger in view of the possibility of flies carrying cholera, should cholera patients be under treatment. An effort was made to dislodge these factories through the Department of Justice, and the United States district attorney at Wilmington, Del., having secured affidavits showing the fish factories a nuisance, attempted to obtain a preliminary injunction in the circuit court of the United States for the district of Delaware against their operations during the summer. This injunction, however, was denied on technical grounds. The Department of Justice is taking further action in the matter.

Following is a portion of the correspondence touching upon this subject:

UNITED STATES MARINE-HOSPITAL SERVICE,

*Delaware Breakwater Quarantine Station, Delaware, June 5, 1894.*

SIR: I have the honor to submit herewith a few reasons why, in my opinion, it is of grave importance to the successful management of this station that the suit impending to secure an injunction compelling the closure, as a nuisance, of two neighboring factories engaged in the manufacture of fish oil and fertilizer, should be vigorously prosecuted and successfully terminated.

The factories are not now in operation, but will be during the summer. I am not able, therefore, to judge of the intensity and character of the odor, though all who have experienced it pronounce it as vile as it is overpowering. The extent to which the soil in the neighborhood has been saturated with the waste products is, however, indicated by a brownish, oily discoloration to a distance of a quarter of a mile in some directions. It is evident that this is not the sort of ground that ought to abut upon a quarantine reservation. It is evident that odors of the character described are to be considered prejudicial to health, and indirectly conducive to spread of contagious disease by giving rise to, at least, functional disorders of digestion. And it is evident that, as the prevailing winds blow from these factories to the quarantine station, these effects will be thereby intensified and prolonged.

But I wish to show further that, as breeding vast swarms of flies, these factories and their polluted vicinity threaten to impair the usefulness of this station by making it difficult, theoretically impossible, to prevent the spread of an infection, such as that of cholera, from the sick to the well and from the camp to the surrounding country and shipping.

It is known that flies can convey the germs of cholera on their feet, soiled in the dejections of patients, and that for two or three days after feeding upon such dejects the bacilli may be found in their intestinal canals. The number and pertinacity of the flies already here are incredible, yet I am told they are very much worse later on.

It is already evident to me that no conceivable precautions can prevent vast numbers of the insects from coming in contact with the discharges of even a single cholera patient. From the hospital tent to the barracks dining room will be an easy and natural excursion.

If the probability of such dissemination were confined to the limits of the reservation the nuisance would be sufficiently great. But it is known here that the flies invade the town of Lewes, 2 miles west, and ships at anchor 2 or 3 miles north of the factories. I personally saw on the night of June 3, being called aboard a fishing smack to see a case of sudden paralysis, that the interior of the vessel was black with flies. The wind had blown that day out to sea, and the captain informed me that he was suddenly invaded by these flies, without doubt from the factories mentioned. They swarmed aboard 25 miles from shore.

Respectfully, yours,

W. D. BRATTON,  
*Passed Assistant Surgeon.*

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,  
*Washington, D. C.*

REEDY ISLAND QUARANTINE—POST-OFFICE ADDRESS, PORT  
PENN, DEL.

From November 30, 1893, to November 30, 1894, 7 vessels were disinfected, 1,082 were inspected and passed, and 33 were spoken and passed.

A full description of this station may be found in the annual report for 1893.

The following report has been received from the medical officer in command:

REEDY ISLAND QUARANTINE,  
*Port Penn, Del., September 25, 1894.*

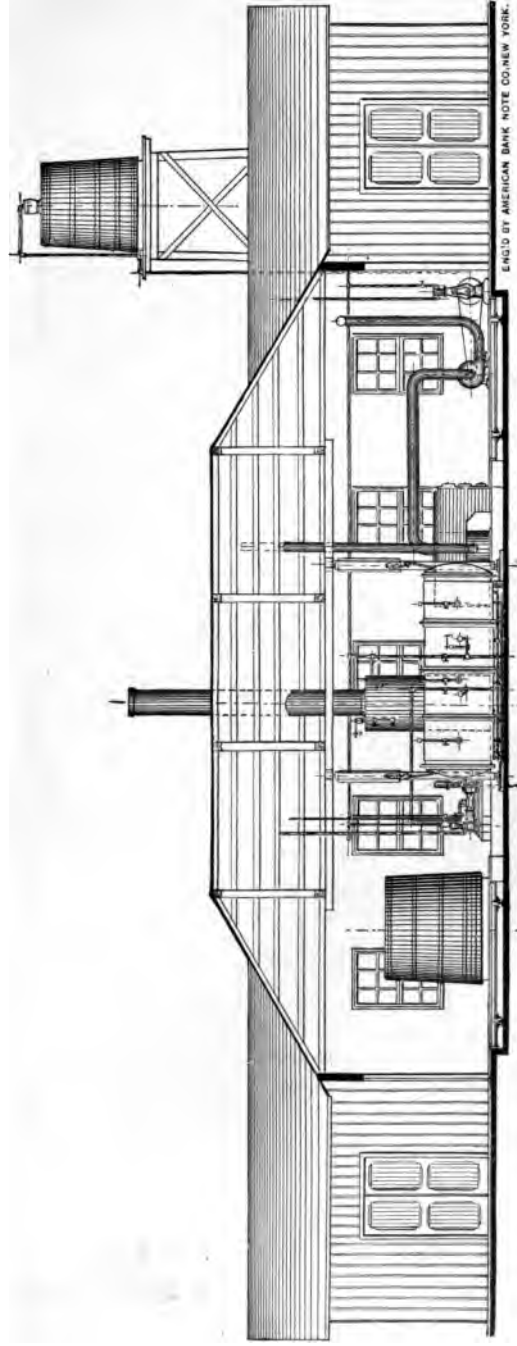
SIR: In accordance with directions to make a report of the operations of the quarantine service at this station during the fiscal year ended June 30, 1894, together with a separate estimate of needed alterations and repairs, I have the honor to submit as follows:

This station was opened for the inspection and disinfection of vessels at the beginning of this fiscal year. The pier is located in the channel of the Delaware River in 30 feet at low water, about 1,500 feet from Reedy Island, and directly opposite Port Penn, on the Delaware shore.

The pier is 400 feet long from points of ice breaks, with disinfecting baggage and warehouse buildings under one roof. The two steam chambers, sulphur furnace, piping, hose, etc., were placed in position by the Kensington Engine Works, and are of fine mechanism and capable of efficient and rapid use.

At the south end of the pier an observation tower and fine signal flagstaff were erected in January of this year; also a submarine cable laid thereto from Port Penn, across Reedy Island, the poles and land-wire connections to the main line at Middletown being erected by the Western Union Telegraph Company.

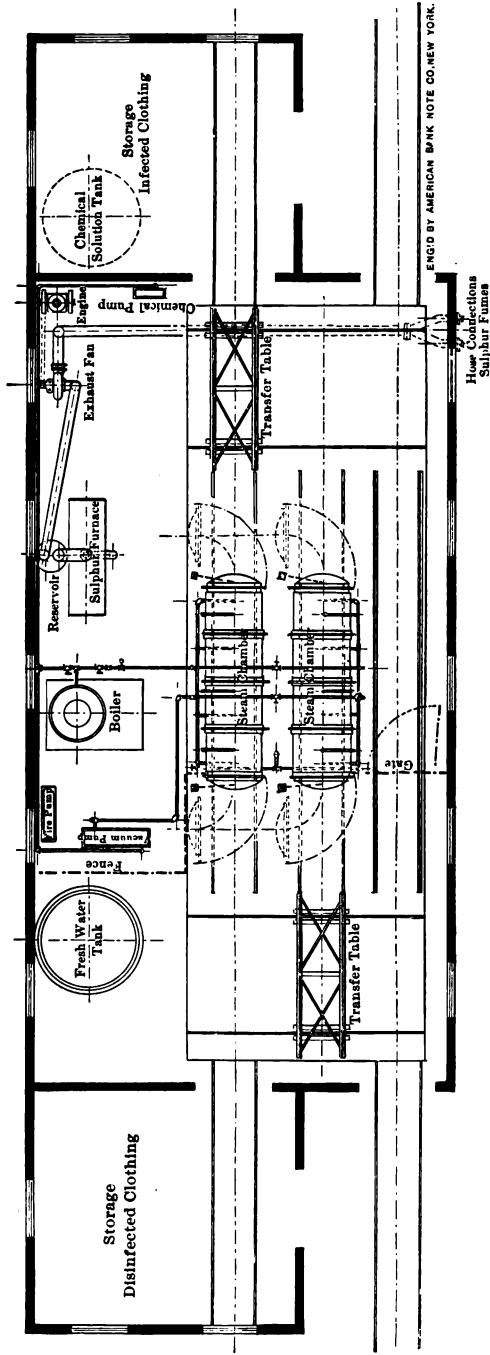
During the year two small rooms were ceiled off in the north end of the rough warehouse building as a protection to the officers and attendants from the inclement weather, and later additional galvanized iron sulphur piping was erected upon brackets along the front length of the building, with suitable hose connections, for more convenience and rapidity in the fumigation of vessels. The ice breaks, consisting of a number of piling driven in a triangular shape at the north and south ends of the pier, and poorly braced, have been badly loosened by strong winds and tides and are in a dangerous condition.



PLAN OF INSTALLATION, DISINFECTING MACHINERY, REEDY ISLAND QUARANTINE. (VIEW 1.)







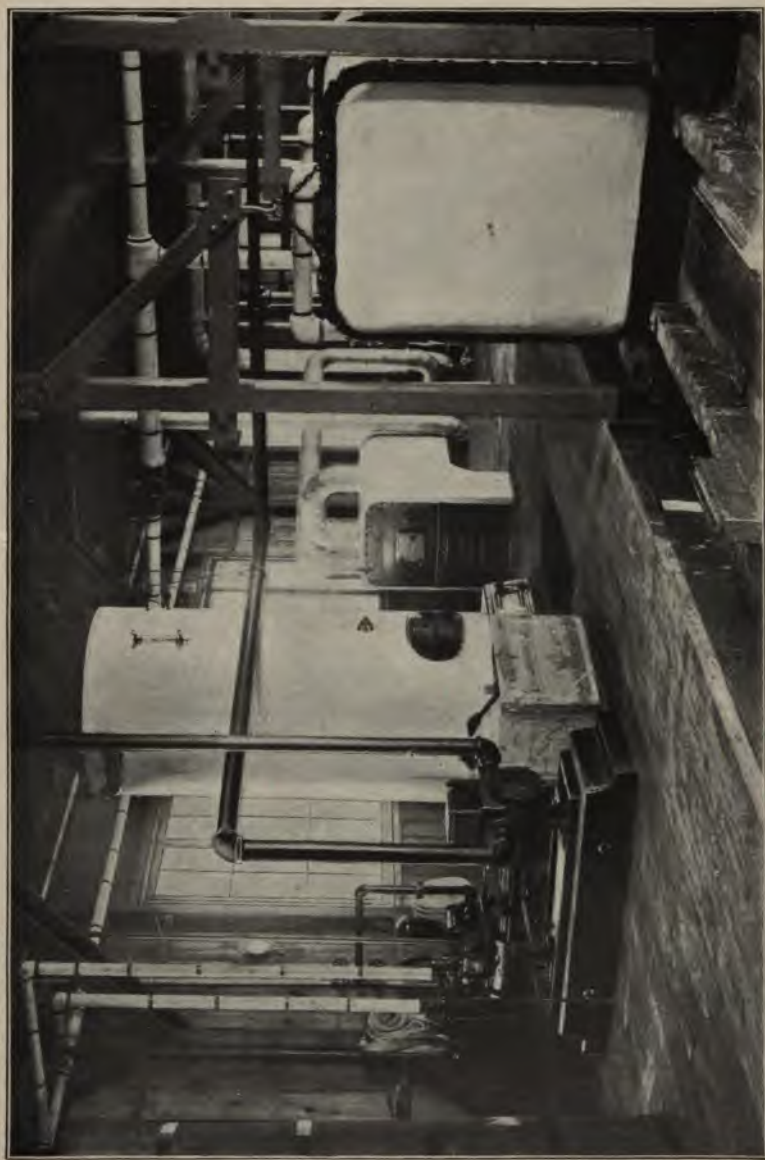
PLAN OF INSTALLATION, DISINFESTING MACHINERY. REEDY ISLAND QUARANTINE. (VIEW 2.)





STEAM DISINFECTING CHAMBERS AND CARS, REEDY ISLAND QUARANTINE.





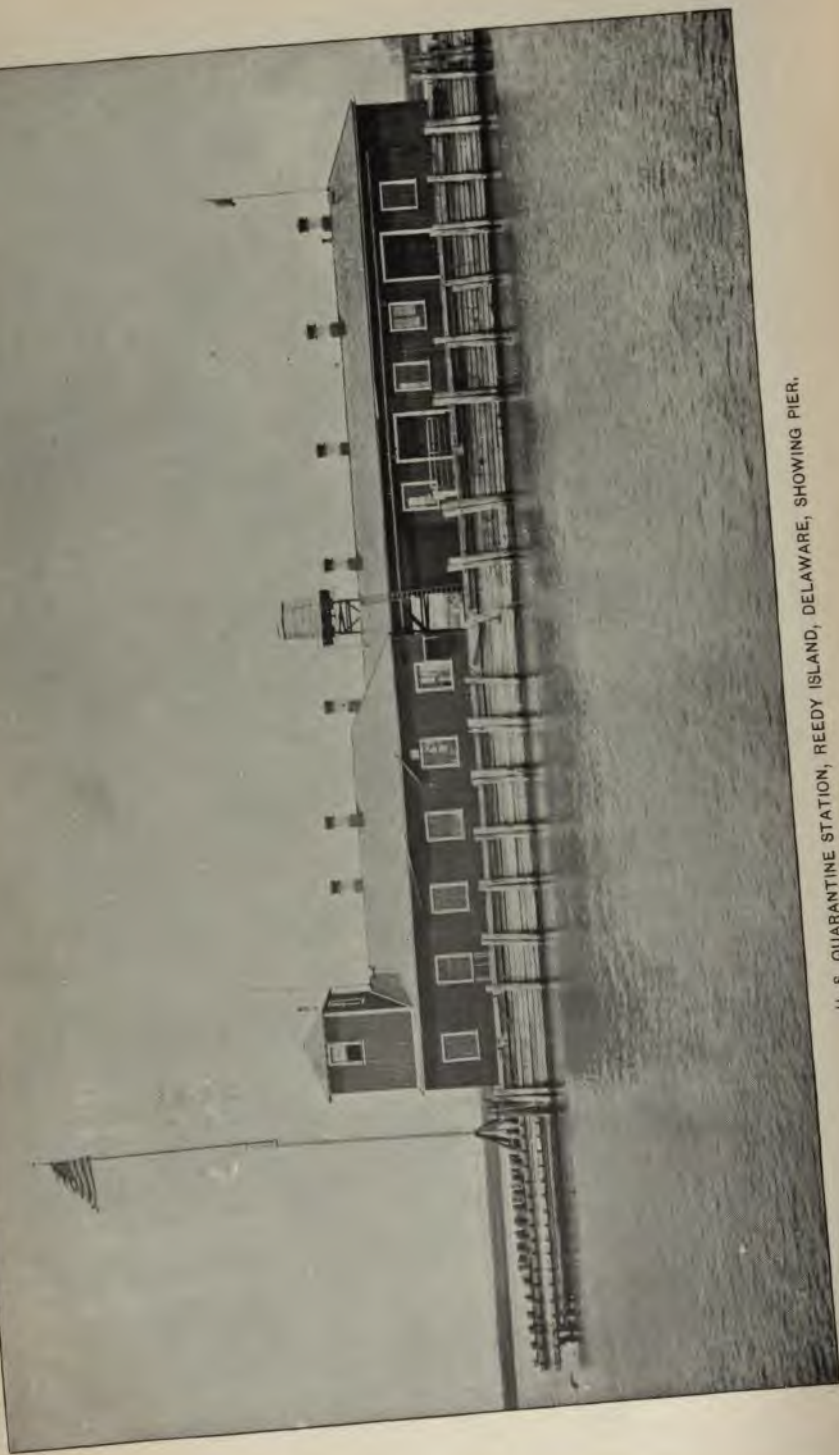
STEAM CHAMBER, SULPHUR FURNACE AND PUMPS, REEDY ISLAND QUARANTINE.



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Marine Hospital Report, 1894.



U. S. QUARANTINE STATION, REEDY ISLAND, DELAWARE, SHOWING PIER.

In the early spring a board of officers, consisting of Surg. George Purviance, P. A. Surg. A. H. Glennan, and Inspector of Public Buildings John J. Clarke, was convened to consider the advisability of locating the surgeon's house, attendants' quarters, and cottage hospital upon Reedy Island. This was recommended in preference to the situation upon the old ice breaks. The buildings with connecting gangways, boathouse, etc., are now completed, waiting to be furnished for occupancy.

The fumigating steamer *Louis Pasteur* has been converted into an efficient boarding vessel by the removal of the old apparatus and the extension of a cabin aft for the office and living of a boarding officer.

Several severe storms damaged the buildings and pier during the year, notably the hurricane of October, 1893, and, considering the depth of water and strong currents in which the structure is placed, it is a marvel that greater loss was not incurred. On this account a number of heavy piling, not less than 18 inches in diameter and 72 feet in length, should be driven in and around the points of the ice breaks, also suitable fender piles upon the front and inner sides of the pier.

An estimate for this work has been forwarded to the Supervising Architect of the Treasury Department.

The buildings on Reedy Island are placed upon piling 7 feet high, and at high water the island is submerged. To remedy this a temporary embankment and dike about the reservation is being constructed by the attendants, but a steam mud machine should be employed for a short time to grade up the inclosed surface and permanently strengthen the embankment. This can be done at a reasonable expense, and also a quantity of broken stone lightered from the Brandywine or Chester quarries and placed along the front embankment, similar to the work about the lighthouse at the southern end of this island.

A good water supply is imperatively needed, now dependent upon wooden cisterns for rain water, which becomes foul and has already caused diarrhea and sickness upon the station. An artesian well, with a pipe diameter of 3 or 4 inches should be bored upon the island (in preference to the pier for use and safety), with pipe connections to the buildings, and boathouse where the boarding steamer can take on a supply at high water and furnish any vessel in need.

A coal and oil house is required near the present gangway and within reach of a lighter at high water. Also a small, strongly built freight boat, for general use in bad weather.

The largest number of vessels inspected at this station in one day was 13; in one month, 138; and the total for the year, over 1,400. The total number of persons inspected, consisting of passengers and crews, was over 100,000.

Very respectfully,

A. H. GLENNAN,

*Passed Assistant Surgeon, Marine-Hospital Service.*

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,

*Washington, D. C.*

CAPE CHARLES QUARANTINE STATION—POST-OFFICE ADDRESS,  
FORT MONROE, VA.

From November 30, 1893, to November 30, 1894, 5 vessels were disinfecting and 147 were inspected and passed.

On one of the above infected vessels there had been one death from yellow fever at sea.

Three cases of yellow fever were admitted to hospital on Fishermans Island.

## REPORT OF THE MEDICAL OFFICER IN COMMAND.

## DISTRICT OF THE SOUTHERN ATLANTIC SURGEON'S OFFICE,

*Cape Charles Quarantine, September 15, 1894.*

SIR: I have the honor to report the following additions, alterations, and repairs at Cape Charles Quarantine Station during the fiscal year ended June 30, 1894. Also additions, alterations, and repairs necessary at this station for the fiscal year ending June 30, 1895. An estimate of probable cost is also attached:

*Fishermans Island.*—A gangway 656 feet long of two rows of piles 10 feet apart, piles in each row spaced 8 feet apart. Shore end of gangway extending inland a short distance beyond mean high tide. Water end of gangway joins onto a wharf extending 47 feet on each side of the gangway and 32 feet beyond terminus of gangway. The boiler room is 19 feet long by 21 feet wide. The laundry room 30 feet 9 inches long by 21 feet wide. The two other wings of the said building are intended for dining rooms, which are 60 feet long by 20 feet wide each. A large tank, 3,500 gallons capacity, for storing water collected from the roof stands outside the building in the angle of the juncture of the dining-room wings. Two detention barracks, each 300 feet long by 24 feet wide, divided into six compartments; these compartments are 50 feet long and contain 96 bunks, 576 bunks in each barrack, and 1,152 in both. A well was sunk about 345 feet below the surface; the capacity of well is 20,000 to 30,000 gallons in twenty-four hours, pumped by steam. The old dwelling house was reshingled; weatherboarding renailed. The water tanks for collecting water from the roof of the dwelling repaired and made serviceable. Three coats of lead and oil were applied to the old dwelling house, which had never been painted before this time.

*Quarantine ship Jamestown.*—A steam disinfecting chamber was installed on the ship *Jamestown*, and a house built over the same inclosing about one-third of the spar deck of that vessel. This vessel was painted and otherwise kept in repair.

*Fumigating steamer Robert Koch.*—Was docked and painted. New grate bars were provided, and the vessel otherwise kept in repair.

*Boarding steamer Dagmar.*—Was docked and her bottom cleaned and painted, new awnings and grate bars provided, and the vessel otherwise kept in good order.

Very respectfully,

T. B. PERRY,

*Passed Assistant Surgeon, Marine-Hospital Service.*

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,

*Washington, D. C.*

CAPE CHARLES QUARANTINE, *September 17, 1894.*

SIR: I have the honor to transmit herewith report of additions, alterations, and repairs made at Cape Charles Quarantine Station during the fiscal year ended June 30, 1894; also the additions, alterations, and repairs necessary for this station during the current fiscal year, together with an estimate of the probable cost of the latter.

The delay in forwarding this report is due to the difficulty experienced in preparing specifications for the work, and principally for the tardiness of parties in furnishing estimates on same after they had been placed in their hands. In consequence of the delay of the contractors in submitting estimates, some of the repairs mentioned as necessary in this report for the current year have been made under authority of paragraph 255, Revised Regulations, Marine-Hospital Service, 1889, and under special authority from the Bureau, namely, docking, cleaning, and painting the steamers *Dagmar* and *Koch*, in August; repairs made to the circulating pump of the steamer *Dagmar*. Bearing bar for grate bars steamer *Dagmar* straightened and brand and grate bars straightened.



U. S. QUARANTINE STATION, FISHERMANS ISLAND, OFF CAPE CHARLES, VIRGINIA. (VIEW 1.)







U. S. QUARANTINE STATION, FISHERMANS ISLAND, OFF CAPE CHARLES, VIRGINIA. (VIEW II.)







U. S. QUARANTINE STATION, FISHERMANS ISLAND, OFF CAPE CHARLES, VIRGINIA. (VIEW III.)

New bearing bar for grate bars of steamer *Koch* and new rudder chain for same boat provided. Material was purchased and bridge wall of furnace of steamer *Koch* repaired by the machinist of the ship *Jamestown*. Main boiler braces of steamer *Koch*, which were burned in two, were removed, welded together at shop, and replaced by engineer department of steamer *Dagmar*.

The port-side gangway ladder of the ship *Jamestown*, which was not in use, was put at the juncture of wharf and gangway at Fishermans Island. An iron ladder not in use was removed from the steamer *Ewing* and placed on the front of the wharf to be used as a sea-way ladder at Fishermans Island; some cleats and ring-bolts not in use were removed from the *Jamestown* to the same wharf, where they will be useful to make vessels fast until larger cleats are provided. A pair of small boat davits belonging to the steamer *Dagmar*, but not in use, and a small boat which came with the *Dagmar* were placed on the gangway at Fishermans Island.

The ship *Jamestown* was painted, tar oil applied to the spar deck and the rigging, and small boats put in repair, and anchor stock for port anchor provided. All of the repairs just mentioned, both at the island and on the ship *Jamestown* and steamer *Koch*, were made by the employees of this station with the exception of making of anchor stock.

The radiators and boiler are in place on the *Jamestown*. To put it in serviceable condition it would be necessary only to purchase the piping and fixtures for connections. The machinist on the *Jamestown* can do this work. The barracks, dining room, laundry, and kitchen building can be connected with the storage-water tank, and board walk from gangway to storeroom constructed by the keeper of the island if the material for same is purchased.

Very respectfully,

T. B. PERRY,

*Passed Assistant Surgeon, Marine-Hospital Service.*

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,

*Washington, D. C.*

**SOUTH ATLANTIC QUARANTINE STATION—POST-OFFICE ADDRESS, VIA  
INVERNESS, GA.**

From November 30, 1893, to November 30, 1894, 32 vessels were disinfected and 72 were inspected and passed.

On the above infected vessels there had been 6 cases of yellow fever at Havana, 2 cases at Rio de Janeiro, and 12 cases and 4 deaths at Santos. Four cases of yellow fever and 1 of smallpox were taken from vessels at this quarantine station.

**REPORT OF THE MEDICAL OFFICER IN COMMAND.**

*SOUTH ATLANTIC QUARANTINE, August 17, 1894.*

SIR: In compliance with your letter of the 9th instant (H. W. A.), concerning changes and repairs at this station during the past year and those needed during the present year, I have the honor to state that since my recommendation of July 7, 1893, there have been no repairs, as then recommended, about the hospital or lazaretto, and I would again suggest that the attendants' room and kitchen and pantry combined be built, as well as the closet, sewer, and water tanks, or the extension of the water main. At the station headquarters all buildings have been kept in minor repair and twice whitewashed, the steward's quarters painted inside, screens of wire gauze fitted into doors and windows of attendants' quarters, a concrete walk laid between the office and the surgeon's quarters, a reading room commenced and partially built for the use of the employees, and a three-quarter-inch iron pipe carried from the stable connection into the vegetable garden at a cost of \$17.10. The

large barge has been hauled out, her copper repaired, and then thoroughly painted. All boats have been kept in good repair. There have been furnished at the surgeon's quarters two grates and mantels of marbleized slate, and one at the steward's quarters, at a total cost of \$185.50. Minor repairs to the cooking ranges aggregate \$21.75.

At the north end the shed covering the disinfecting plant has been completed at a cost of \$639.20, including riding bits for mooring purposes. All buildings at this dock were painted two coats outside, the disinfecting shed whitewashed inside, and the machinery painted and kept in good order. An artesian well, some 275 feet in depth, with a flow of some 40,000 gallons per day, has been completed at a cost of \$1,200, including boiler and pump, to be used in delivering the supply to engine and tanks. No repairs have been yet commenced upon the wharf itself. During the year there has been furnished the station a naphtha launch at a cost of \$3,050, which has needed painting and minor repairs, but has been of the greatest use to the station.

In addition to the improvements suggested at the lazaretto, I would state that the surgeon's quarters need painting very badly, inside and out; the roof must be repaired and the piazza flooring partially renewed. All the fences about the reservation are much in need of repair, and the board walks must be renewed. The reading room for the attendants, now about half completed, can be finished at a cost of \$75. A coal house, as recommended last year, should be built. At the north end the repairs contemplated on the ballast wharf should be made as early as practicable; also the gangway, which now extends shoreward some 200 feet, should be completed.

In view of the existing conditions, I again recommend that some adequate arrangement be made for the treatment of the sick, and to this end the erection of a small hospital at some point within the quarantine grounds easily accessible, thus insuring attention without the danger to the patient which would be entailed under the present arrangement.

As before suggested, a telephone communication between the disinfecting plant and the surgeon's office would be of much use and tend to facilitate the public business.

All of which is respectfully submitted.

Very respectfully,

EUGENE WASDIN,

*Passed Assistant Surgeon, Marine-Hospital Service.*

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,

*Washington, D. C.*

#### SOUTH ATLANTIC QUARANTINE, August 18, 1894.

SIR: In compliance with your letter of the 9th instant (H. W. A.), I have the honor to state that during the year ended the 30th of June there have been 79 vessels inspected at this station, with a total of 68,229 tons. Of these 48 were "passed" without detention, and 31, including 5 steamships, with a capacity of 21,320 tons, were disinfected according to modern methods. Also, there have been detained for inspection during the months of July, August, September, October, and November, 1893, 48 "suspects," to whom 386 rations, at an average cost of 35.4 cents, were issued, at a total cost of \$136.86.

Very respectfully,

EUGENE WASDIN,

*Passed Assistant Surgeon, Marine-Hospital Service.*

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,

*Washington, D. C.*

#### BRUNSWICK QUARANTINE.

From November 30, 1893, to November 30, 1894, 58 vessels were disinfected and 90 were inspected and passed.



U. S. QUARANTINE STATION, BRUNSWICK, GEORGIA. (VIEW I.)





Marine Hospital Report, 1894.



U. S. QUARANTINE STATION, BRUNSWICK, GEORGIA. (VIEW II.)



One case of yellow fever developed on the American schooner *Sadie Willcutt*, from Cienfuegos, after her arrival in quarantine, and two cases on the Spanish brigantine *Amalia*. Both vessels were sent to South Atlantic quarantine for further treatment.

REPORT OF THE SANITARY INSPECTOR, MARINE-HOSPITAL SERVICE, IN CHARGE OF STATION.

BRUNSWICK QUARANTINE, *September 20, 1894.*

SIR: I have the honor to submit a report of the alterations and repairs that have been made at Brunswick (Ga.) Quarantine Station during the fiscal year ended June 30, 1894:

When the Marine-Hospital Service assumed charge of Brunswick Quarantine, August 10, 1893, the means of enforcing quarantine regulations at this station were poor, there being no facilities for the disinfection of vessels as prescribed by the Secretary of the Treasury. Since that time an entirely new plant, with the exceptions of wharves and outbuildings, has been constructed, consisting of ballast plant with the necessary adjuncts for the quick and easy discharge of ballast, and a disinfecting plant built after the latest and most approved plan, and furnished with all of the required appliances for the proper disinfection of vessels.

The ballast plant was built at a total cost of \$1,395, and consists, in addition to wharf, of 1 Lidgerwood 12-horsepower hoisting engine complete; 3 iron ballast tubs, of 12,000 cubic inches capacity each; 2 ballast cars, each with a capacity of 45 cubic feet; 450 feet of trestle, averaging 7 feet in height, built of heavy material, with car track of steel rails for conveying ballast suitable distance from wharves. A house 12 by 14 feet and 10 feet high has been erected over the engine. One dozen wheelbarrows have been purchased for dumping stones along the water front to make secure the earth ballast against the invasion of the tides.

The disinfecting plant was erected at a cost of \$5,533.00, and was put in operation May 1, 1894. It consists of 1 steam disinfecting chamber, 2 cars, 2 transfer tables, 1 boiler, 1 engine, 2 pumps, 1 sulphur furnace, 3 tanks, and a sufficiency of piping and hose to make all necessary adjustments.

The steam disinfecting chamber is built of steel, is double in construction, consisting of an inner and outer chamber, each being connected to boiler by suitable piping and interconnected by a system whereby the steam can be interchanged as desired. Each chamber is connected with vacuum pump, whereby a partial vacuum can be produced in either, and connected also with steam trap, which relieves either of condensation. The chambers are supplied with steam and vacuum gauge, safety valve, and two thermometers, arranged to extend at right angles into the inner chamber. The doors are supplied with cranes, and are so adjusted that they may be quickly opened or closed.

The boiler is a 30-horsepower vertical, suitable for rapid steaming, and has all of the necessary appurtenances, and the required piping, valves, etc., for connecting it with steam chamber, engine, and pumps.

The sulphur furnace is double, with reservoir and suction fan. A galvanized-iron pipe 8 inches in diameter and 90 feet in length, supplemented by 30 feet of 6-inch rubber hose, for conveying sulphur fumes into hold of vessel, is attached to the fan.

The engine used for driving fan is adapted for high running speed, and is fitted with fly and driving wheel and the necessary belting.

The pump used for bichloride solution is a 4½ by 3½ by 4 inch Worthington duplex, with double connected suction to bichloride tank and sea water, and the discharge is provided with hose connections for both 1-inch and 1½-inch hose. Each discharge is provided with 150 feet of hose.

The vacuum pump is 6 by 5½ by 6 inch Worthington duplex complete, with delivery and suction pipes for attachment to steam chamber.



The boiler, steam disinfecting chamber, and steam pipes have a covering of magnesia.

The plant is furnished with three cypress tanks of 2,500, 4,500, and 7,500 gallons capacity. The smallest is used for the solution of bichloride and is connected through pump to sea water and double hose discharge. The second tank supplies boiler, to which it is connected by piping and injection, and is also connected with the third or storage tank through suction hose from pump.

The station has been furnished with a machinist's workbench and vise, a tool closet, with an outfit of tools necessary for making adjustments and keeping machinery in order.

The main building inclosing this machinery is 44 by 27 feet, 12 feet between floor and ceiling joists, with an addition 20 feet in length and 15 feet wide. The framing of the building is of strong and heavy material and thoroughly braced, and supported on solid foundation. The floor is of dressed lumber, 2 inches in thickness, and rests upon joists 2 by 10 inches, 16 inches between centers, braced with "herring-bone" bridging. The ceiling joists are 2 by 8 inches, spaced 2 feet between centers. The building is provided with sixteen windows, twelve light, 10 by 14 inch glass, two double doors 6 by 8 feet, three single doors 3 by 7 feet. To the roof are attached four galvanized-iron gutters with down spouts and pipe for connecting same with storage tank. The building was erected at a cost of \$764.50.

The station has been furnished with a naphtha launch 30 feet in length, 6½ feet beam, coppered, and fitted with 4-horsepower engines; cost, \$1,500; one Whitehall boat, \$60; one barge or flat 30 feet long, 10 feet wide, and 3 feet deep, \$125.

Quarters for officer in charge have been repaired by additional story 14 by 23 feet and 10 feet in height, ceiled, having five windows and one door and piazza 8 by 14 feet, with stairway leading to ground below. Total cost, \$195.

A small room 12 by 14 by 10 feet, ceiled inside, has been built for use as cookroom. Cost of material, \$15.25; cost of labor, \$12.10; total, \$27.35.

Repairs to launch *Mary Lee* have been made, at an expense of \$64.40; piling for mooring of launch driven, at a cost of \$6.

The total expense of alterations and repairs may be stated as follows:

Cost of disinfecting machinery and putting up same.....	\$6,366.60
Cost of ballast plant complete.....	1,395.00
Buildings.....	986.85
Naphtha launch, barge, and boat, including repairs on launch.....	1,749.40
Tanks.....	205.00
Total.....	10,702.85

The repairs necessary to be made at this station for the coming year and the cost thereof depends whether or not the station is to remain at its present site. Remaining here, the most urgent need will be for an additional ballast wharf, since vessels bringing ballast are frequently detained on account of there being only one wharf at this station at which ballast may be discharged. A new wharf intended for such was partially erected by the city of Brunswick in the year 1893, but was not completed on account of the United States assuming control of this station. It is yet in good condition, and can be completed and furnished with all necessary piling and dolphins for mooring of vessels for a total cost of \$300. The necessary car tracks and ballast cars can be added at a cost of \$270. This wharf when completed will have a front 60 by 30 feet, with an extension 350 feet in length and 10 feet in width, and with an average height of 20 feet. This extension is at right angles with front wharf and extends toward the shore. It is built upon piling surmounted by heavy plates and covered with plank floor of suitable thickness. It is ready for car tracks, and the front wharf alone remains to be added. This would give sufficient dumping space for ballast for one year or more without change of car tracks. An additional hoisting engine will be required for this wharf, the cost of which will not exceed \$700.

Before another season the site of the present trestle for dumping of ballast will require removal, or trestle to be built higher, since during the present season the accumulation of ballast is now almost on a level with car track. The trestle can either be moved from its present site, or elevated sufficiently, at a cost of \$250.

One of the urgent needs of the station is a suitable building for the accommodation of masters and crews of vessels when compelled to take them ashore. There are only two small buildings designed for occupancy, belonging to the station, containing together seven small rooms, all of which, save one, are occupied by employees of the station. I would recommend that \$500 be expended in procuring a suitable building to meet this exigency.

Another necessary expenditure is to supply the station with water. During the rainy seasons of the year sufficient water is obtained from rainfall collected from roofs of the buildings. This, however, is not practicable during the entire year, especially during the summer months, when the need of such is most urgent. This deficiency has been supplied during the past year by obtaining water from the city by means of boat at a cost of one-half cent per gallon. I recommend an expense of \$400 for constructing a well for the supply of this station with good water. The probable depth of the well necessary to get sufficient flow of water will not exceed 350 feet. A 3-inch well of this depth, with all of the necessary piping to connect it with points to be supplied, need not exceed this amount.

The buildings of the station, built by the Marine-Hospital Service, need painting for their preservation. I recommend that \$100 be expended for material for this purpose. The painting can be done by employees of the station. This makes a total of \$2,520 for the necessary repairs at this station for the present fiscal year.

Respectfully, yours,

R. E. L. BURFORD,

*Sanitary Inspector, Marine-Hospital Service.*

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,

*Washington, D. C.*

KEY WEST QUARANTINE—LOCATION, DRY TORTUGAS—POST-OFFICE  
ADDRESS, KEY WEST, FLA.

From May 12 to November 30, 1894, 35 vessels were disinfected and 1 was inspected and passed.

From these infected vessels there were taken into hospital 11 cases of yellow fever, 1 of which proved fatal; also, on these vessels, there had been 3 cases of yellow fever and 1 death in Havana just prior to departure.

The following reports have been received from the medical officer in command:

REPORT ON OPERATIONS.

KEY WEST QUARANTINE,

*Dry Tortugas, Fla., August 21, 1894.*

SIR: In answer to your circular letter (H. W. A.) of the 9th instant, asking for a report of the operations of the quarantine service at this station during the fiscal year ended June 30, 1894, I would respectfully submit that 24 vessels were treated at this station during the period; 17 in 1893 and 7 in 1894. Of these there were 3 which arrived with yellow fever aboard; 2, the British barkentine *Antilles* (August 8), and the British barkentine *J. N. Dexter* (October 4), in the season of 1893; and 1, the British barkentine *Albatross* (June 17), in that of 1894. Each vessel had two cases of fever.

In 1893 the patients were treated on this island (Garden Key) in the buoy shed. This year they are treated on Bird Key, about a mile or a mile and a quarter distant, and communication with Garden Key maintained under such conditions as to render it well-nigh impossible to convey infection.

Nearly all of these vessels were from Havana, and a number were probably infected, as evidenced by the occurrence of fever aboard in that port.

No new case of yellow fever occurred in any vessel after arrival.

Last year considerable difficulty and delay were at times experienced in getting vessels to the wharf, which is not well located for that purpose. On June 1 of this year, however, the tug *Chas. Foster*, United States Marine-Hospital Service, was assigned to the station, and this difficulty has not been experienced since. This vessel is of the very greatest use to the station, and, indeed, it would be impossible to conduct it in a manner satisfactory to shipping without it.

The plant is a good one, and disinfection and detention of vessels is in accordance with the United States quarantine regulations.

There is one peculiarity in this compared with the other refuge stations, viz, that the vessels which come here are not sent from other ports, save a very few from Key West, Charlotte Harbor, and Tampa. Those that come do so preferring it to other quarantine stations.

Its location is exceedingly favorable, especially for vessels from Cuban or Gulf ports, nearly all of which pass in immediate proximity to it. The harbor is easy to enter, and gives safe anchorage in deep water. The place is very healthful, and the vessels are free from the swarms of mosquitoes which infest so many quarantine stations. Judging from the opinions I have heard expressed by masters, it is becoming very popular among the sailing vessels which come into the Gulf.

Respectfully, yours,

H. R. CARTER,

*Surgeon, Marine-Hospital Service.*

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,

*Washington, D. C.*

#### REPORT ON ALTERATIONS AND REPAIRS.

KEY WEST QUARANTINE,

*Dry Tortugas, Fla., August 31, 1894.*

SIR: In answer to Bureau circular letter (H. W. A.) of August 9, 1894, directing me to report the alterations and repairs at this station for the fiscal year ending June 30, 1894, I would say that they consisted in (1) building a coal shed by the side of the gangway from the wharf, at a cost of \$481.19 for material, the labor being done by the attendants. This is a good, well-constructed building, capable of holding about 250 tons of coal. (2) Painting part of the roof over the quarters, at a cost of about \$21.25 for material, the labor being done by hospital attendants. (3) Minor alterations and repairs were made to the disinfecting plant in June, 1894, increasing its efficiency and rapidity of action. Also some alterations were made to get a proper supply of fresh water to the wharf for the steamer and other purposes. (4) The stumps of worm-eaten piles of the old light-house wharf were cut off by a diver close to the sand, and some other obstructions to vessels lying at the dock removed in June, 1894, at a cost of \$132.

The recommendations and estimates for the present fiscal year are matters which require considerable time and care to make correctly. So far I have not been able to do so. Just as soon as I can I will make them.

Respectfully, yours,

H. R. CARTER,

*Surgeon, Marine-Hospital Service.*

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,

*Washington, D. C.*

## REPORT ON EQUIPMENT OF STATION.

KEY WEST QUARANTINE,  
*Dry Tortugas, Fla., September 13, 1894.*

SIR: I beg leave to submit the following report on the equipment of this station for your consideration:

The plant here is too well known to the Bureau to need description.

The steam chamber is satisfactory, although less convenient and requiring more care in its management than the newer chambers. A steam exhaust has been added to it by which a vacuum of  $6\frac{1}{2}$  pounds can be obtained in four minutes, and by going over the lead joints, as will be done this winter, this can be increased to 10 pounds. It works more quickly than the vacuum pump and takes less steam, although I do not know that it adds materially to its efficiency.

Owing to having no self-registering or electrical thermometers, I can give no accurate observations on the penetration of the steam and temperature attained in beds, pillows, etc.

The sulphur furnace and annexa are also satisfactory, and for the class of vessels we have as good, I presume, as are made.

The arrangement of the delivery pipe can be bettered, but what we now have answers very well.

The arrangements for using the bichloride solution, however, are bad. The tank on top of the shelf leaked so badly that it destroyed the gutters and rendered the water in the large tank unfit for drinking, besides eating through the galvanized-iron covering of the platform and injured the covering of the steam chamber. I took it down and set it on the wharf. It holds only 1,000 gallons. The solution is delivered by a rotary pump turned by hand, and it turns very hard, through a 1-inch hose and a one-eighth-inch nozzle. Now, to wash a vessel properly with a one-eighth-inch stream of water by hand power is a long and laborious process, and impatience and sympathy for the men at the pump militate against thoroughness.

I have fitted up a steam pump, a small one, and use that now on the same hose with a one-quarter-inch nozzle, four times the area of the old one. The result is more satisfactory.

This pump is lined with brass, and although I use every precaution, taking it apart after each use of it, it will soon be ruined by the mercury.

The hose, also, is too small for rapid and efficient work, and the tank is too small. We frequently have to stop and refill and redissolve the bichloride during the disinfection of a vessel.

I propose to use the 3,000-gallon iron tank, asphalted inside, for the bichloride tank, and pipe it out through a 2-inch pipe, delivering it through a  $1\frac{1}{4}$ -inch hose and a three-eighths-inch nozzle, using for this purpose a rotary pump, driving it, however, by the little engine which works the sulphur fan, by means of a handwheel. The only expense will be the hose, \$0.75; the handwheel, \$5, and the pump, \$14. The work will be done by the engineer of the *Foster* during the winter. New hose would have to be purchased any way. The 1,000 gallon tank will be cemented and used to catch water from the coal shed for use on the wharf.

We have been greatly inconvenienced by having the apparatus for all of our disinfecting processes at one place, while by United States Regulations forty-eight hours must intervene between the fumigation of the hold of a wooden vessel and its washing with bichloride solution. This requires either that a vessel must lie at the wharf forty-eight hours, keeping others waiting, or else that she must be moved away after fumigation, brought back for the bichloride, and again moved when all was completed. The first method is wrong to the other vessels, and the second very annoying, inconvenient, and costly in coal; still it is this that I have generally done when a vessel was waiting. It seems essential to the smooth and efficient working of the

station to have a means of using the bichloride solution with the vessel elsewhere than at the wharf.

The present needs of the station will be best met by calking the forward tank on the *Foster*—it leaks badly at present—and putting an iron pump aboard her with the required connections, and using this tank and pump for the bichloride solution. The vessel can then be moved from the wharf as soon as the  $\text{SO}_2$  process and steaming the fabrics is complete, three to eight hours, and taken to her anchorage outside, and at the proper time the *Foster* go alongside and wash her down with bichloride. I think this will cost the Department nothing, as the engineer believes that he can so change one of the pumps aboard her, remove the brass lining and replace it with iron, as to be what we want. It may be necessary to purchase an iron pump, price \$175 to \$200. It will be worth tenfold that amount to have an apparatus for using bichloride solution on vessels at their anchorage, and will increase threefold the capacity of the station for work, if it can get it to do.

The wharf is in a bad place and badly located in that place. I see no way to remedy it, and it will do with our present clientele well enough. If the station is ever developed so as to handle a fair proportion of the vessels and steamers entering the Gulf, there must be either (1) a new wharf built, (2) the two points which "pocket it" cut away, or (3) a floating disinfecting plant provided.

The choice lays between (2) and (3), and probably (2) is the cheaper and the best, while a floating plant possesses some advantages of convenience over a stationary one and does quicker work.

The wharf will be extended, I think, sufficiently by dolphins, which are contracted for now, and can be extended as much as may be desired, and all needed moorings provided very economically by the same means and by anchors.

The house on the wharf is badly placed and will eventually be pulled down by some vessel coming in where it is. It should be put up farther from the face of the wharf and lower.

*The steamer Foster.*—Owing to the position and location of the wharf a tug for handling vessels is a necessity, and without one I would recommend closing the station as at present equipped. The *Foster* fills this function well. She is strong and sufficiently swift, and is simply invaluable.

The only defects are the nature of her engines—a steeple compound, which may catch on a center at a critical moment—her large coal consumption, and the fact that her forecastle is uninhabitable in this climate. The coal consumption has been brought down by her engineer by various changes to about three-fifths what it was on arrival. The first defect must be guarded against; the last endured. It would be an error to say that she exactly suits the work, but she does exceedingly well. She needs no alterations, only minor repairs, new smoke stack, etc., which, except the necessary docking once a year, the engineer can do at the station during the winter.

For the handling of ballast vessels, the ballast incapable of disinfection, our facilities are extremely meager. The best that we can do is to hoist it out (if the wharf is free we can use our hoisting engine) and replace it by sand. This sand must come from East Key, 4 miles away, on the deck of the schooner *Montross* and be hoisted aboard. Now, unless the vessel can lie at the wharf all of this time, and that is scarcely conceivable, she must do all of this work by hand, and all of the hardest, getting the sand aboard the schooner in wheelbarrows, by hand in any event. Anything would be preferable to a vessel, and I would advise a vessel with a large amount of ballast to discharge and replace not to stop here. Still with the present clientele of the station I do not feel justified in proposing any better method of getting ballast. The chance is there will be only a small amount of it taken here, and the only efficient methods which I can think of involves considerable expense in outfit. I do not, however, regard the ballast matter one of great importance here at present; most of the vessels we will get are empty and part of the remainder have ballast capable of disinfection.

The water supply is a question which I can not touch on until I know more about it. It is an important question.

Respectfully, yours,

H. R. CARTER,  
*Surgeon, Marine-Hospital Service.*

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,  
*Washington, D. C.*

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REPORT ON THE LOCATION OF THE DRY TORTUGAS AS A QUARANTINE STATION.

KEY WEST QUARANTINE,  
*Dry Tortugas, Fla., September 13, 1894.*

SIR: I have the honor to inclose herewith a short report on the location of this station as a place for quarantine, which, if you think fit, might be put in the annual report. I really write it for your own consideration, and suggest its publication because things published are more attentively considered and more often referred to, being convenient of access, than a manuscript report.

I am aware that one does not know all of a station from a three months' residence, and it might have been better to have waited to the end of term of service here. I would see more, and it may be, a little differently. Nevertheless, I think all in this is true—is self-evidently true. That the station as now conducted will disinfect nearly all of the sailing vessels from the West Indies, practically American schooners from Cuban ports, is, I think, beyond dispute. I have not heard from Pensacola, but leaving out that port, we have handled about four-fifths of their sailing vessels which have entered the Gulf since June for ports east of the Mississippi. We will get about all next year. That as now conducted its clientele will be confined to this class, save steamers for Charlotte Harbor, is also, I think, true. The quarantine fee cuts no great figure in the expenses of a steamer and, while it acts in our favor, it is not much of a factor. For sailing vessels it is proportionately much higher, and hence more important.

If the method I suggest in the accompanying paper is put in practice and the station is properly handled, I think it is equally true that we will disinfect the steamers from Cuban ports for Mobile, Pensacola (possibly Tampa), New Orleans, and Apalachicola.

I do not know if the plan is now feasible or consistent with the general quarantine policy of the Service. Of that the Bureau must judge; my part is to put the plan and the consequences of its adoption clearly before you from the standpoint of Tortugas.

It is a waste of money to greatly develop this station unless we can make it proportionally useful.

We need to have the cooperation—control is better—of the ports of destination (as many as possible) to begin this thing.

I believe that a few general considerations on this place as a quarantine station would be of service to the Bureau in enabling it to judge of its capabilities and defects, and hence mature general plans for its management consistent with its general quarantine policy.

The defects of its location are: (1) The bad reputation the neighboring reefs have for wrecks; (2) the difficulty of prompt communication with the mainland, getting supplies, etc.; and (3) distance of the station from ports of destination of vessels rendering it impossible for a certain class of vessels to leave it save with considerable ballast, about one-half full ballast; with this must be considered the difficulty of obtaining ballast here. I know of no others.

The first is rather a matter of repute than real danger. It is not a dangerous place to enter or to leave.

The second undoubtedly increases the difficulty of administration and renders it difficult for vessels which need supplies to get them. It is a matter of small importance save as adding to the expense of administration.

The third is a real and serious difficulty for vessels in ballast, and a very serious difficulty if in ballast incapable of disinfection. It causes delay even if in hard-stone ballast.

The advantages of its location are:

- (1) Its isolation is perfect.
- (2) It is a very healthful place, free from malaria, and the anchorage free from mosquitoes, etc.
- (3) A perfectly safe, commodious, and easily entered harbor, with good holding ground and deep water. The smallest vessels are safe in Bird Key and Garden Key harbors. The largest can enter them. There is room enough in the general harbor—Man-of-War Harbor—for a fleet; hence vessels need not be crowded. There are three entrances to the harbor, and no wind can blow which is not a fair wind to enter and leave by one of them.
- (4) Its position at the entrance of the Gulf. Every vessel coming into the Gulf by the Straits of Florida must make Tortugas Light and come within a few miles, 5 to 18, of this station. Every vessel from the West Indies not coming through the Florida Straits or coming up from Brazil makes Cape San Antonio Light, and thus must come close, 30 to 100 miles, according to destination, to the station. Save vessels from Mexico and the Carribean ports of South America, practically all vessels for Gulf ports requiring quarantine for yellow fever pass close to the station, and these pass close to it if going into the Atlantic.
- (5) Its position with regard to Havana and Cuban ports. For the Gulf, Havana is the port principally to be feared; probably as much as all the other yellow-fever ports together, and this place is only eight or ten hours by steamer or eighteen to twenty-four hours by sailing vessel from Havana (and the wind is always fair), and on the route of every vessel entering the Gulf.

Herein lie many advantages:

(a) It prevents the infection of vessels. In many cases (sailing vessels are here referred to) when yellow fever develops on vessels it does so just about the time of leaving or just afterwards. This is so well known that it is only necessary to mention it. Of six vessels which have come here with yellow fever aboard so far this season, three left Havana having had no fever while there. By coming here the sick are taken off, the vessel disinfected, and the remainder of the crew are removed from further exposure to infection within a very short time from the development of the first case, in one instance only six hours. If the vessel continues to her loading port, from two to fourteen days must elapse before the same thing can be done, and the chance of contamination of the vessel and further sickness among the crew is greatly increased. My experience at the Gulf quarantine confirms this. If a vessel from Havana had one case en route, she generally had several by the time she arrived.

(b) If the vessel is infected, i. e., has a focus of infection aboard, the chances of infection of the crew thereby are less if exposed to it a short time—it may be less than one day—than for a longer period. This is especially the case if, as is not unusual, the focus of infection is in the packed dunnage of the crew. The men are not apt to do any unpacking in a single day's run, and are certain to do it if the voyage is long. Here we take pains to have our immune crew take the bags of the crew of the vessel on the wharf and unpack them there, the vessel's crew staying aboard and having nothing to do with it.

(c) Another consideration, although not strictly a matter of quarantine, is the very great advantage to the sick. By stopping here they receive medical attention as soon as they are taken and not a few lives will be saved by so doing. The difference in mortality of yellow fever aboard ship and treated ashore is very great. The advantages enumerated under this head are of little importance to steamers on

account of the short time required to reach their ports of destination. Also they more rarely have yellow fever aboard.

These reasons render the station a very useful one to sailing vessels coming from West Indian ports, especially from the more dangerous ones or those with sickness aboard. These vessels are generally without ballast or with little ballast, and are without doubt the most dangerous class that visit our shores.

For vessels from the Brazils—large sailing vessels in ballast and steamers—while convenient to their route, this station presents no advantage over quarantine at their port of destination, and for the former is decidedly less advantageous on account of the cost (in time) of handling the ballast here.

For steamers it is as good, no better than such other quarantine, the small loss of time in coming here being the only difference, and that, of course, is against this station.

Now the station depends for its clientele on vessels which come here voluntarily, and only such vessels will come as find it to their advantage to do so. Obviously, then, it will be sought by sailing vessels from Havana and the more dangerous West Indian ports, and under present conditions will not be sought by vessels from Brazil or by steamers. Some steamers will come, as they have come hitherto, because the advantages and disadvantages to them are almost evenly balanced.

Most of its clientele will be American vessels, and it must be considered in estimating its service to shipping that it is American shipping which is benefited.

Will its usefulness be confined to disinfecting sailing vessels from the West Indies for Gulf ports and from Mexico for the South Atlantic? If it did only this it would handle two-thirds of the dangerous vessels which enter the Gulf ports, and from a sanitary standpoint would fill a useful place, but its work would never be extensive. Under present arrangements I think this will be the case, and that the clientele of the station will indeed increase (as it has done this season), but not markedly so, and will not include the steamers in the same trades or the Brazilian sailing vessels.

I think I may premise that the quarantine of the future will be performed at a few thoroughly equipped stations, disinfecting for many ports at which inspection stations only are needed. These stations must be, as I said, thoroughly equipped and with a full corps of trained attendants and officers, and will of necessity be expensive, but less expensive than the aggregate of the many less-efficient stations they substitute. While its services to American shipping and its sanitary value to the Gulf ports may justify the equipment and maintenance of this station as such a station should be, yet its value would be greatly increased if it could be made as useful to the steamer trade from yellow-fever ports as it is to sailing vessels.

Now the ideal of maritime sanitation is to prevent the infection of the vessel at the port of departure; failing this, to disinfect her there and have the vessel free from infection when she leaves such port. Unless such a vessel carried some person who had contracted the fever and in whom it had not yet developed, and who, developing it, would infect the vessel again, there would be no need of disinfection or detention elsewhere; only an inspection to see that the above conditions did not obtain, and the part of quarantine most onerous to commerce, viz, the detention, could be done away with in whole or in part, depending on the length of the voyage.

This station being in the track of vessels coming into the Gulf is, for the purpose I am going to mention, almost the same as if at the ports which such vessels leave, and, to a certain extent, can fill the last rôle.

Vessels can be disinfecting here and detained only such time as, with the time they will pass en route to their ports of destination, will make the required time of quarantine detention. If on arrival at her port inspection showed that no sickness had developed, and that the required time, counting from the disinfection ("last possible exposure to infection"), had passed, there need be no bar to her at once entering port in pratique. In other words, "the time en route from this station to her port of destination could count as time in quarantine," and the vessel would save that much detention.



For steamers this is perfectly safe. It is only from one to two (or at most two and a half) days from this place to any Gulf port to which vessels are at all likely to go, and it is not possible that a man would develop yellow fever and recover so completely within that time as not to be known to have been sick.

There would be no sanitary risk in this plan. If sickness occurred en route it would of course necessitate a second disinfection and detention, as, indeed, it would if it occurred at this station, and do no further harm.

The statistics of the quarantines of the United States which I have been able to see—Charleston, Savannah, Sapelo, Brunswick, Pensacola, Mobile, Gulf Quarantine, and Louisiana—show that steamers rarely develop yellow fever after disinfection, unless they have had it en route or on arrival, and the small percentage that do would be still further reduced by the detention here; and nearly all of the steamers thus treated, or practically all, if proper care can be taken in their selection, would develop no fever after leaving, and save this one or two days' delay, worth from \$195 to \$250 per day. In the few cases in which fever might develop en route no harm would be done.

By selecting the vessels, the vessel, the port of departure, and the port of destination all to be considered, the same thing might be done for sailing vessels, but for some ports they might be out so long that cases of yellow fever might possibly occur aboard, recover, and not be discovered by the inspector. It could then not be a general thing with them.

This method is unobjectionable from a sanitary standpoint. It is safer than disinfection at the port of departure, there being no chance of recontamination here, and nearly as good commercially. There is no place in the Gulf so well suited for putting it in practice as this. It will be as advantageous for all steamers coming into the Gulf to report here for quarantine as it is now for the sailing vessels, and the station will occupy a position of sanitary importance and commercial value second to none in the Gulf.

If vessels are disinfected in the manner required by the West Indian Quarantine Regulations in the ports of departure (par. 12, Art. VIII) there will be no need of such vessels stopping here.

The equipment of this station is ample to handle a fair number of vessels, and but little additional expense in plant would be needed for a large number, 300 to 400 per season.

Respectfully, yours,

H. R. CARTER,  
*Surgeon, Marine-Hospital Service.*

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,  
*Washington, D. C.*

GULF QUARANTINE—LOCATION, SHIP ISLAND, 12 MILES OFF  
BILOXI, MISS.

From April 1 to November 30, 1894, 18 vessels were disinfected and 23 were inspected and passed.

On these infected vessels there were 16 cases of yellow fever at Rio de Janeiro and 4 deaths therefrom, and 2 cases at Santos with 1 death at sea.

REPORT OF THE MEDICAL OFFICER IN COMMAND.

GULF QUARANTINE, SHIP ISLAND, MISSISSIPPI, *August 16, 1894.*

SIR: In reply to Bureau circular letter of the 9th instant (H. W. A.), I have the honor to submit the following report of the operations of the quarantine service at this station during the fiscal year ended June 30, 1894:

Eighty-eight vessels were handled during this period. Of these 55 were disinfected and 33 inspected and passed. Three vessels were detained temporarily for not

having a United States consular bill of health, and the fact reported to the Bureau and the collector of customs of this port. Three cases of yellow fever were treated in hospital, all ending in recovery.

The following is a list of noninfectious diseases treated in hospital:

Malarial fever, remittent.....	10
Pneumonia, lobar.....	1
Diarrhea.....	1
Tubercle of lung.....	1
Incised wound of thorax.....	1

The station was partially destroyed by a hurricane on the 1st of October, 1893, and was at once removed to Ship Island, occupying the old and half-ruined buildings erected by the National Board of Health.

On the 10th of June, 1894, the disinfecting barge *Zamora* arrived at the station, thus completing the disinfecting plant.

Very respectfully,

G. M. GUITÉRAS.

*Passed Assistant Surgeon, Marine-Hospital Service.*

SURGEON-GENERAL MARINE-HOSPITAL SERVICE.

*Washington, D. C.*

GULF QUARANTINE,

*Ship Island, Mississippi. August 16, 1894.*

SIR: In compliance with Bureau circular letter of the 9th instant (H. W. A.), directing that a separate report be transmitted of all alterations and repairs made at this station during the fiscal year ended June 30, 1894, and a statement made of the repairs and alterations required during the current fiscal year, I have the honor to submit the following statement of alterations, etc., made during the fiscal year ended June 30, 1894:

Two footbridges, one connecting the medical officers' quarters with the office building, the other connecting the main station with the beach of Chandeleur Island.

Buildings given a coat of paint. A disinfecting plant erected on the pier head. Wire window screens and doors purchased for office, medical officers' quarters, and steward's quarters.

On the removal of the station to Ship Island, after the hurricane of October 1, repairs were made by the hospital attendants to the buildings which were there occupied for quarantine purposes. The injuries sustained by the fumigating steamer *Welch* during the storm were also repaired. In April and May, 1894, the *Welch* received more extensive repairs, the bichloride pump was practically renewed, the main shaft bearings reset, new steam pipes put in, etc.

The repairs and alterations required during the current fiscal year amount, practically, to the erection of a new quarantine station, with the exception of the disinfecting plant, which is at present quite complete.

Very respectfully,

G. M. GUITÉRAS.

*Passed Assistant Surgeon, Marine-Hospital Service.*

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,

*Washington, D. C.*

The Gulf quarantine station has always been a refuge station, used by all the cities of the United States on the Gulf of Mexico east of the Mississippi River. This station, by act of Congress, March 5, 1888, was removed from Ship Island to Chandeleur Island, and on this account, after the destruction of the station at Chandeleur Island by storm, November 1, 1893, and the temporary removal of the quarantine station back again to Ship Island, it was deemed unlawful to make the

latter a general refuge station without some authority of Congress. To supply the place of the disinfecting chamber which was destroyed by storm the barge *Zamora*, containing a steam disinfecting chamber, was towed from Wilmington, Del., to Ship Island by the Revenue-Cutter Service, and the old buildings on Ship Island were put in a condition fit for occupancy, and with the steamer *Welch*, which carries a sulphur fumigating furnace, the station was ready for the handling of infected vessels until Congress could legalize the establishment of the refuge station on Ship Island. The quarantine authorities at Mobile and Pensacola were informed that infected vessels arriving at their ports must be treated at their own quarantine stations. This caused discontent, particularly at Mobile, which had been sending all infected vessels and yellow-fever patients to the Gulf quarantine. In the appropriation act for 1895, however, Congress legalized the transfer of the Gulf Quarantine Station from Chandeleur to Ship Island, and the health authorities of the neighboring cities were immediately notified that all infected vessels and yellow fever patients might be sent to this last-named station.

#### SAN DIEGO QUARANTINE STATION, CALIFORNIA.

From November 30, 1893, to November 30, 1894, 101 vessels were inspected and passed, and 4 were spoken and passed.

#### REPORT OF THE MEDICAL OFFICER IN COMMAND.

NATIONAL QUARANTINE STATION,  
*San Diego, Cal., August 27, 1894.*

SIR: In compliance with instructions contained in your circular letter (H. W. H.), of date August 9, 1894, I have the honor to submit herewith a report of the operations of the quarantine service at this station for the fiscal year ended June 30, 1894:

During the above-mentioned period there arrived at San Diego Quarantine Station from foreign ports 87 steamers and 26 sailing vessels, a total of 113 steam and sail, which were duly boarded, inspected, and passed. Their ports of departure were Panama, Acapulco, Mazatlan, Ensenada, Newcastle, Cardiff, Swansea, London, Liverpool, and Nanaimo.

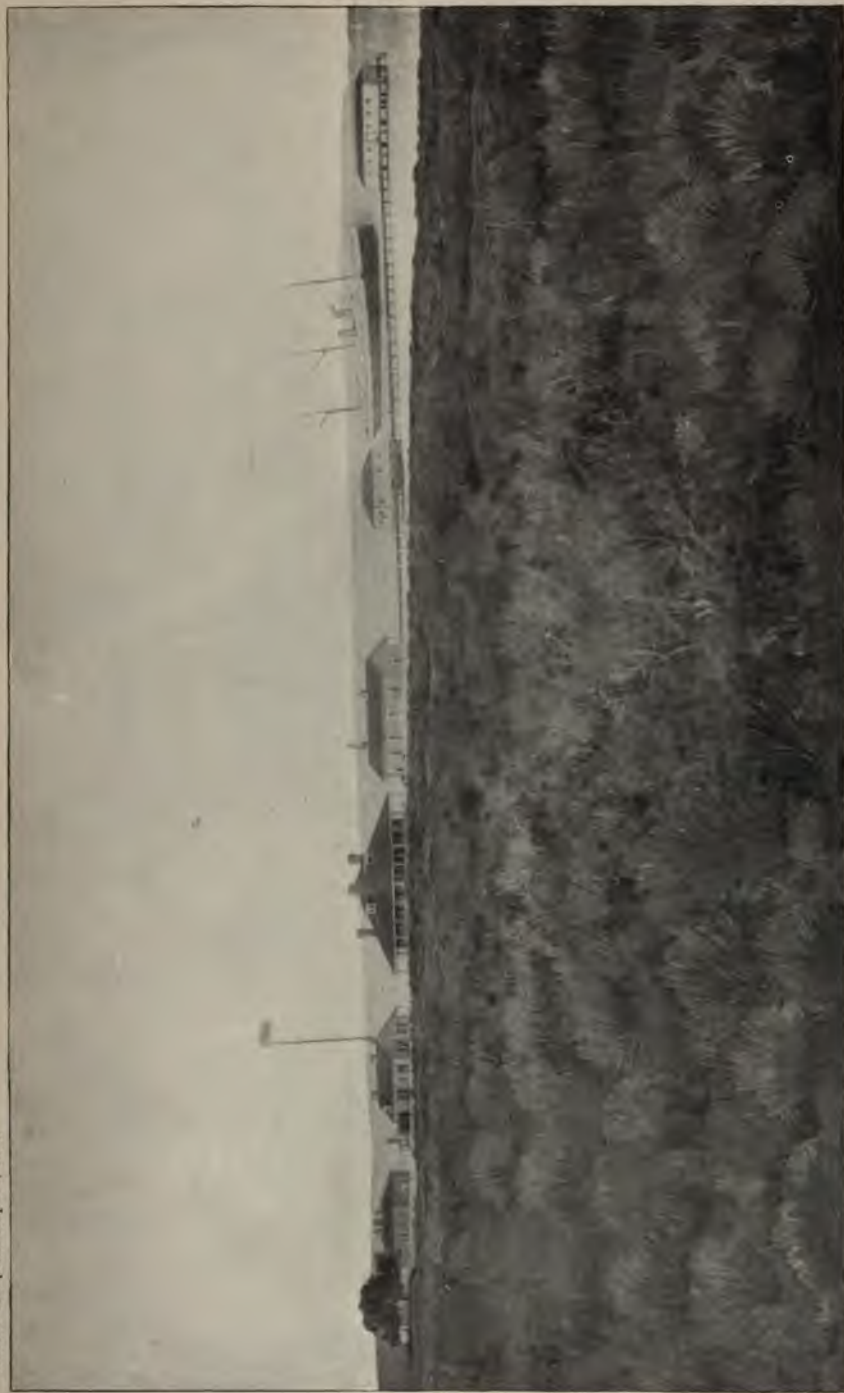
Early in the year the Pacific mail steamers ceased to touch at this point on account of the annulment of the Government mail contracts. This has served to greatly reduce the yearly average of foreign arrivals.

The buildings of the station as completed in July, 1893, consisted of surgeon's quarters, a cottage hospital, men's quarters, boatmen's quarters and boathouse, and a warehouse on the wharf for the reception of fumigating plant.

In October, 1893, a laundry and coal room was completed, the building being 21 feet by 56 feet 6 inches, placed on a foundation of 24 piles 10 inches in diameter driven in the sand 6 feet deep, the front or laundry room being 21 feet by 30 feet 6 inches, and supplied with a battery of stationary washtubs and a Wilks hot-water heater capable of heating 120 gallons of water to the boiling point every hour.

The coal room in the rear of the laundry building is 21 feet by 25 feet 9 inches, which gives ample storage capacity for fuel. Within the past year the quarantine grounds have been inclosed with a good, substantial board fence, the grounds graded, and about 1,200 feet of good, heavy 2-inch board sidewalk laid. The work of building the sidewalk and fence, as well as a portion of the work of grading, was done by the employees, of whom there are three available for this class of work when they are not engaged in the performance of the regular duties of the station.

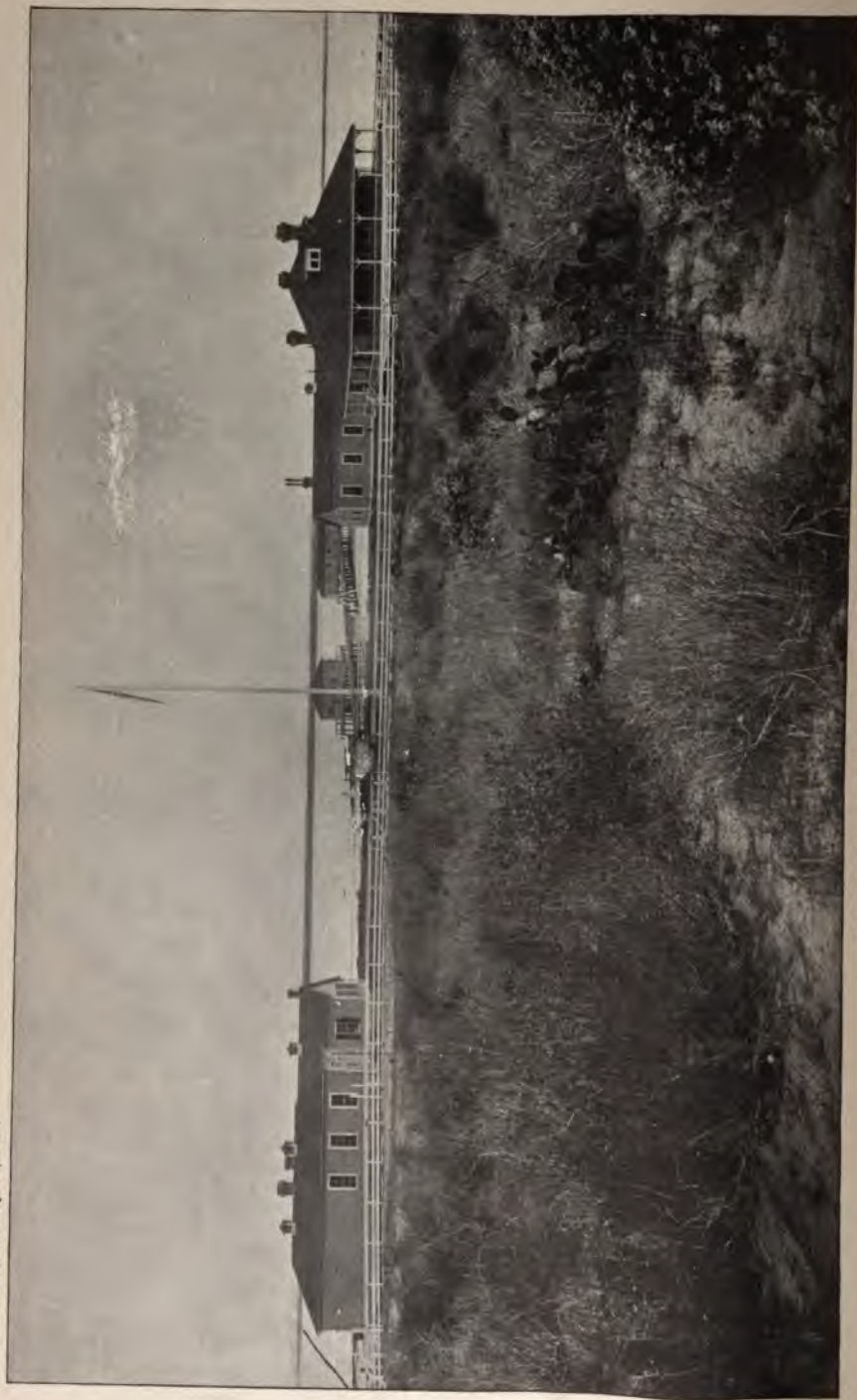
Marine Hospital Report, 1894.



U. S. QUARANTINE STATION. SAN DIEGO. CALIFORNIA. (VIEW 1.)







U. S. QUARANTINE STATION, SAN DIEGO, CALIFORNIA. (VIEW II.)

A contract has been let for the construction of a disinfecting plant, to be placed in the warehouse on the wharf. The machinery will consist of a steam disinfecting chamber, sulphur furnace, bichloride tanks, engine, pump, blower, etc. On account of the almost constant prevalence of smallpox in Mexican coast ports and the towns tributary thereto, it is as essential that a winter inspection service should be maintained for vessels touching at those ports as it is during the summer. This station was supplied with a 35-foot 10-horsepower naphtha launch last January. She was built by the Gas Engine and Power Company, of Morris Heights, N. Y., and shipped by rail to San Diego. She has given entire satisfaction, is economical of fuel, and has been of great service in enabling us to transact the business of the station promptly. She is considered indispensable, the saving of the cost of transportation of supplies, etc., alone being almost sufficient to pay for the cost of naphtha consumed. Too much can hardly be said in praise of her worth and efficiency.

The past two years having been practically years of drought, it was deemed advisable to cut away the dense growth of brush immediately surrounding the station. This brush had become very dry and inflammable. Accordingly, the employees were set to work clearing a strip of the Government reservation extending around the quarantine grounds 100 feet in width without having previously obtained permission from the War Department to do so.

In the very near future San Diego quarantine station is destined to become a refuge station for most, if not all, vessels engaged in commerce between Mexican and Central and South American Pacific coast ports and the United States; also infected vessels arriving at Wilmington, San Pedro, Santa Monica, and Redondo would have to be remanded here for disinfection, so that this station is not only a protection to the people of San Diego, but to the city of Los Angeles, as well as the entire southwestern portion of the State of California.

The following is a report of repairs and alterations made in buildings, grounds, and quarantine vessels at the National Quarantine Station, San Diego, Cal., during the fiscal year ended June 30, 1894:

For materials for painting wire-screen doors of buildings and for cement and materials for protecting wooden piling at shore end of gangway to wharf from ravages of teredo.....	\$13.45
For materials for repairs and alteration stairway and boathouse landings..	10.00
For repairs and alterations to down spouts of buildings.....	25.00
For repairs to plumbing and for placing four 100-gallon galvanized iron tanks in buildings to relieve plumbing of heavy pressure.....	108.50
For repairs and alterations to flues to obviate defective working cooking ranges.....	34.80
For emergency repairs to plumbing before tanks were put in.....	19.75
For materials for repainting boats and repair of davits.....	24.00
<b>Total.....</b>	<b>235.50</b>

Very respectfully,

W. W. MCKAY,

*Acting Assistant Surgeon, Marine-Hospital Service, in Charge.*

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,

*Washington, D. C.*

#### SAN FRANCISCO QUARANTINE, ANGEL ISLAND, CAL.

For a full description of this station see Annual Report for 1892. The boarding of vessels arriving at San Francisco has been done by the local quarantine officer. The medical officer in command of the station



states that no infected vessels have been received there for disinfection. The following is his report upon the repairs made during the year:

NATIONAL QUARANTINE STATION,  
*San Francisco, Cal., August 17, 1894.*

SIR: In reply to Bureau letter (H. W. A.) of the 9th instant, directing me to make a report of all alterations and repairs which have been made at my station during the fiscal year ended June 30, 1894, and a statement of repairs and alterations which in my opinion will be needed during the current fiscal year, with an estimate of the cost thereof, I have the honor to state that the roofs of all the buildings were painted with metallic paint; the boathouse, Chinese barracks, pump house, and old cottage were painted; a water-closet was built in the rear of the Chinese barracks with water and sewer connections; that a 12-strand barbed-wire fence was built around the reservation; two water-closets were put in the barracks building with water and sewer connections; that a roof was made over the deck of the U. S. S. *Omaha*, additional berths made, and tanks from the hold were placed, one on the forward and one on the after deck, for flushing water-closets; walls of rooms in barracks building and lazaretto were painted; a small wharf was built near the lazaretto, and that the old cottage was reshingled.

Respectfully, yours,

C. T. PECKHAM,

*Passed Assistant Surgeon, Marine-Hospital Service.*

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,  
*Washington, D. C.*

#### PORT TOWNSEND QUARANTINE.

From November 30, 1893, to November 30, 1894, 115 vessels were inspected and passed.

The following is the report of the acting assistant surgeon in charge of the station until relieved by P. A. Surg. W. G. Stimpson, September 27, 1894:

PORT TOWNSEND QUARANTINE,  
*Port Townsend, Wash., September 22, 1894.*

SIR: In reply to circular letter (H. W. A.) dated August 9, 1894, directing me to forward a report of the operations of the quarantine service at this station during the fiscal year ended June 30, 1894, I have the honor to state that during that period 89 foreign vessels were boarded, inspected, and passed.

There were no cases of contagion during the year.

The British ship *Hilston*, forty-three days from Shanghai, arrived November 17 with two or three sailors complaining, and having no bill of health she was detained in quarantine two days. Discharged on 19th, all well.

During the year the hospital ship *Iroquois* was housed over by a good substantial roof preparatory to any possible emergency pending the completion of the permanent station.

Ten acres of land were cleared of timber at Diamond Point and buildings erected thereon, namely, a surgeon's quarters, hospital, attendants' and detention quarters, a substantial wharf and warehouse, and water tank; also a tank house containing two large water tanks contiguous to main buildings.

February 1 a keeper was employed to take care of the buildings and grounds, to prevent depredations and fires, and to look after the station and property generally.

I have the honor to be, very respectfully, your obedient servant,

S. B. CONOVER,

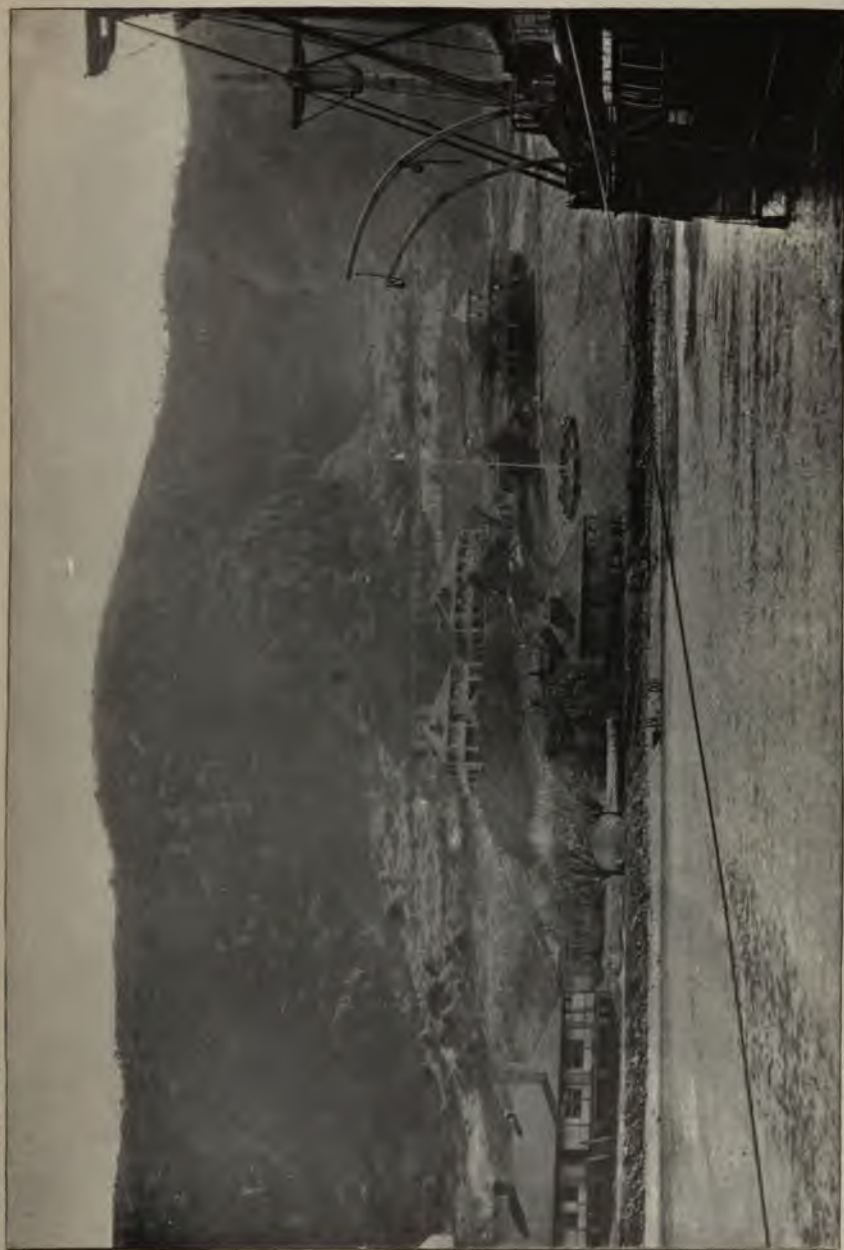
*Acting Assistant Surgeon, Marine-Hospital Service, in Charge.*

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,  
*Washington, D. C.*



PHOTO ENGELSON, N.Y.





U. S. QUARANTINE STATION (SAN FRANCISCO), ANGEL ISLAND, CALIFORNIA. (VIEW II.)



PORT TOWNSEND QUARANTINE,  
*Port Townsend, Wash., September 24, 1894.*

SIR: In reply to circular letter dated August 9 (H. W. A.), directing me to make a report of alterations and repairs made during the fiscal year ended June 30, 1894, and a statement of those needed during the current year, with estimate of cost, I have the honor to state that a roofing was placed over the *Iroquois* at a cost of \$1,525, and 8 port holes and 10 scupper holes stopped on the *Iroquois* at a cost of \$20; also repairing to the hand pump on the *Iroquois* at a cost of \$16.60.

Alterations and repairs for the current year can hardly be anticipated or estimated pending permanent construction. If, however, the contemplated necessary improvements are included under this head, I estimate the disinfecting plant to cost \$6,000; waterworks and appliances, \$4,500; necessary additional outbuildings, \$250; a limited amount of furniture and utensils for different quarters, \$500; small boat for station, \$175; grubbing and preparing grounds, \$500, and probable necessary incidental expenses not foreseen, \$500.

I have the honor to be, very respectfully, your obedient servant,

S. B. CONOVER,

*Acting Assistant Surgeon, Marine-Hospital Service, in Charge.*

SURGEON-GENERAL MARINE-HOSPITAL SERVICE,

*Washington, D. C.*

Since the date of the above report a regular medical officer of the Marine-Hospital Service, P. A. Surg. W. G. Stimpson, has been placed in charge of this station and contracts have been made for the installation of the disinfecting plant.

APPROPRIATION FOR A UNITED STATES QUARANTINE STATION AT  
 SOUTHPORT, N. C.

As a result of the inspection of the quarantine stations on the North Carolina coast the entire absence of a proper quarantine for the port of Wilmington, N. C., was brought to the attention of the Bureau, and the following letter pertaining to the subject was received from the president of the State board of health of North Carolina.

NORTH CAROLINA BOARD OF HEALTH,

*Raleigh, N. C., May 25, 1894.*

DEAR SIR: After a conference with P. A. Surg. J. J. Kinyoun, representing yourself and the Service, the North Carolina board of health, at its recent meeting, on the 16th instant, in the city of Greensboro, unanimously passed the following motion:

*"Moved, That in view of the inability or unwillingness of the city of Wilmington to contribute its part toward carrying out the act of the last general assembly providing for the erection of a first-class quarantine station at Southport, the secretary be instructed to officially request the United States Marine-Hospital Service to take charge of and operate that station; and that the secretary be authorized to explain this action on the part of the board."*

In obedience to the instructions above given I hereby officially request you, as representing the United States Marine-Hospital Service, to take charge of and operate the quarantine station at Southport.

Should you accede to our request, thereby bringing your Service into closer relations with our board, we feel that we can count with confidence upon a continuance of the same cordial spirit of cooperation that has always existed between us.

In explanation of the action of the board I would say: Dr. George G. Thomas, a member of our State board of health and secretary of the board of quarantine of

the port of Wilmington, N. C., realizing the importance of a first-class quarantine station at the mouth of the Cape Fear, has been working for it for many years.

At the last session of the general assembly, in 1893, ably assisted by Dr. T. S. Burbank, of the board of quarantine, and others, and by the cholera scare, he succeeded in obtaining an appropriation by the State for that purpose of \$20,000, conditioned, however, upon its being supplemented by an appropriation to the same object of \$5,000 on the part of the city of Wilmington. The board of aldermen of that city at a recent meeting declined to make the appropriation and appointed a committee to confer with you on the subject.

While the sentiment of the State board of health is in favor of local control as far as practicable, it was, as above stated, unanimous in the opinion that under existing circumstances it would be best for you to take charge of that station. We trust you can do so.

The board regretted your inability to be present in person, but as that could not be they appreciated your sending as your representative, in response to our invitation, one so agreeable and so entirely acceptable in every way as Dr. Kinyoun.

Hoping that we may look forward to the pleasure of having you with us at some meeting in the near future, I am,

Very respectfully, yours,

RICH'D H. LEWIS, M. D.,  
*Secretary.*

WALTER WYMAN, M. D.,  
*Surgeon-General Marine-Hospital Service, Washington, D. C.*

As a result of the efforts made to correct this quarantine deficiency on the Atlantic Coast, an appropriation was made by Congress in the sundry civil appropriation bill approved August 18, 1894, granting \$25,000 for the erection of a quarantine station at or near Wilmington. A board of officers, consisting of P. A. Surg. J. H. White, First Lieut. William H. Roberts, of the Revenue-Cutter Service, and Dr. George G. Thomas, of the State board of health, was appointed to select the site. They have selected a point in the river about 1 mile from Southport and about 25 miles from Wilmington. Plans and specifications have been prepared, and it is expected that the station will be ready for service during the ensuing quarantine season.

#### REVIEW OF QUARANTINE CONSTRUCTION AND EQUIPMENT DURING THE PAST THREE YEARS.

It may be of interest to give a brief review of the work accomplished by the Marine-Hospital Bureau during the past three years in the selection of quarantine sites, the erection of piers and buildings, construction of disinfecting apparatus, and other details of equipment. The difficulties attending the establishment of a quarantine station are great. The requirements for a proper site are numerous, including remoteness from inhabited districts, accessibility, sufficient anchorage, water supply, etc., and the difficulties are invariably enhanced by local fears and the protests of owners of adjoining property, who imagine that its value will be impaired. Sandy Hook, New Jersey; Reedy Island, Delaware; Fishermans Island, Virginia; Waynesville, Ga.; Ship Island, Mississippi, and Diamond Point, Washington, are stations selected, purchased, or otherwise obtained possession of during the period mentioned.

## SUMMARY OF CONSTRUCTION, ETC.

## CAMP LOW, SANDY HOOK.

Barracks, hospital, immigrants' bath house, laundry, and other buildings; two steam disinfecting chambers.

## DELAWARE BREAKWATER.

Barracks, immigrants' bath house, steward's quarters, laundry building, steam disinfecting chamber, artesian well, etc.; barge *Zamora* purchased and fitted with complete steam disinfecting plant; reservation fenced in.

## REEDY ISLAND.

Pier and warehouse, with observation tower; two steam disinfecting chambers; sulphur fumigating furnace; telegraphic cable laid; boarding vessel purchased.

## CAPE CHARLES.

Wharf and gangway, warehouse, barracks, kitchen, dining room, laundry, and steam disinfecting chamber. At boarding station (Old Point Comfort) naval vessel *Jamestown*, obtained from Navy Department, provided with a deck house, steam disinfecting chamber, etc. Boarding vessel purchased.

## SOUTH ATLANTIC.

New wharf and warehouse, steam disinfecting chamber, sulphur fumigating furnace, artesian well, etc.; boarding vessel provided.

## KEY WEST.

Iron wharf, warehouse, steam disinfecting chamber, sulphur fumigating furnace; boarding vessel purchased.

## GULF.

New pier, warehouse, steam disinfecting chamber.

## SAN DIEGO.

Pier and gangway, warehouse, officers' quarters, boathouse, laundry, attendants' quarters; boarding vessel purchased; steam disinfecting chambers contracted for.

## SAN FRANCISCO.

Barracks; reservation fenced in; naval vessel *Omaha* secured from the Navy Department and fitted up for reception of detained passengers.

## PORT TOWNSEND.

Wharf, warehouse, barracks, and other buildings; naval vessel *Iroquois*, transferred from the Navy Department, housed over for detention of passengers; disinfecting machinery contracted for.



## BRUNSWICK.

Steam disinfecting chamber and sulphur fumigating furnace contracted for.

Within the period named it will be seen that the Bureau has provided as many as eighteen steam disinfecting chambers, two of which, however, at the present writing, although contracted for, are not yet in position, namely, those at San Diego and Port Townsend. The steam chambers are located as follows:

Camp Low .....	2
Delaware Breakwater .....	1
Reedy Island.....	2
Fishermans Island.....	1
The <i>Jamestown</i> .....	1
South Atlantic quarantine.....	1
Brunswick, Ga.....	1
Key West, Fla .....	2
Gulf quarantine.....	1
San Diego.....	1
Port Townsend.....	1
Waynesville, Ga. (temporary).....	1
Barge <i>Zamora</i> .....	1
Portable chamber .....	2
Immigration station, Ellis Island <sup>1</sup> .....	1

These chambers, of the most modern and improved type, were designed by an officer of the Service, who made a special study of steam disinfection while in Europe, and to whose ingenuity much of the improvement in steam disinfection at the present time is due.

IMPROVED STEAM DISINFECTING CHAMBERS DESIGNED AND CONSTRUCTED UNDER THE SUPERVISION OF THE BUREAU.

The following description is furnished by the designer, P. A. Surg. J. J. Kinyoun:

The steam disinfecting chambers now in use at the several quarantine stations are constructed on the following plan:

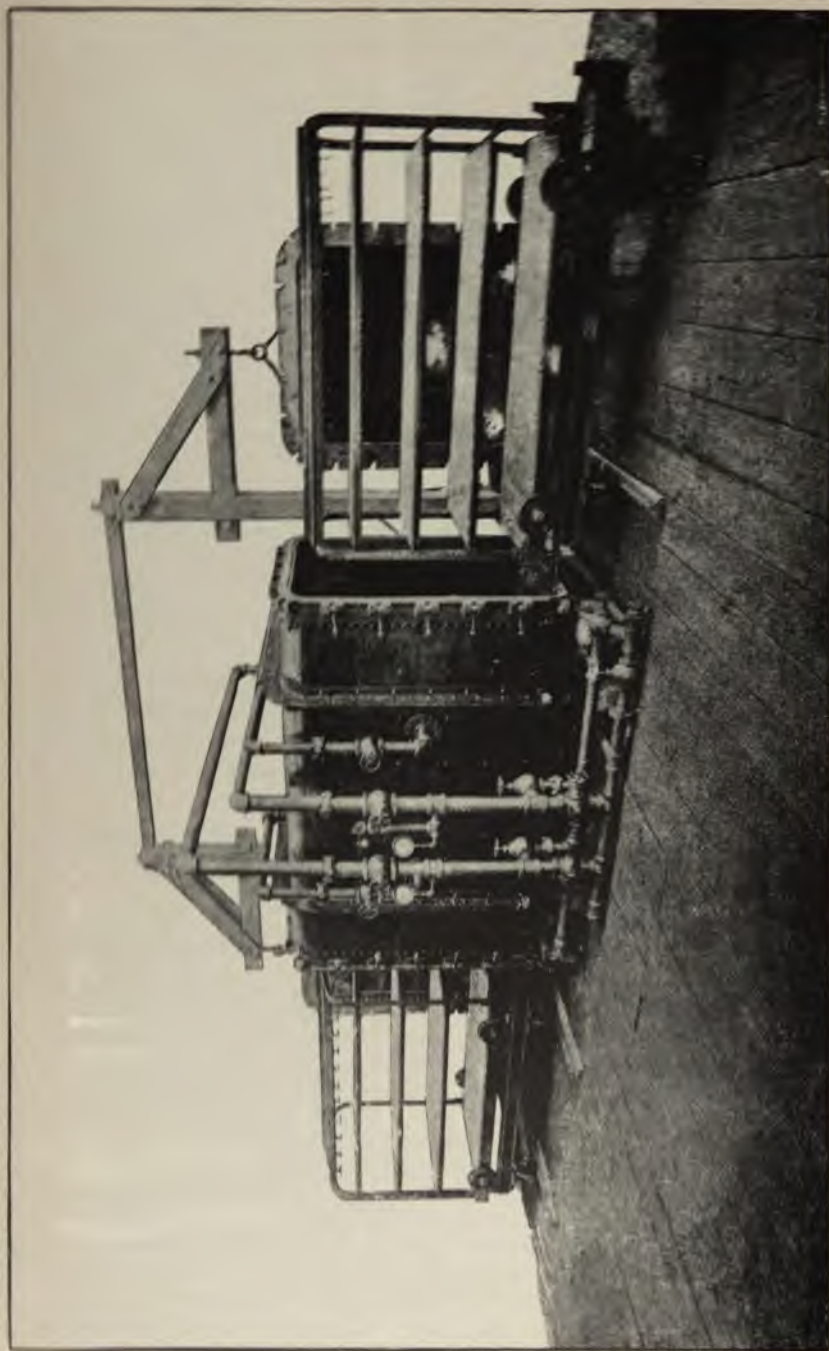
The chamber is rectangular in shape, to give the most effective space during exposure with greatest economy of steam. It is constructed of an inner and an outer steel shell, forming a steam jacket, with cast-iron end frames, intermediate truss bands, and screw-stay construction.

The doors have concave steel plates riveted to cast angle frames, fitted with steam-tight gaskets, and are handled by convenient cranes, being drawn tight by drop-forged steel eyebolts, swinging in and out of slots in the door frames.

The jacket gives a perfect circulation, prevents to a great degree condensation, and dries thoroughly the goods exposed. This jacket is filled with steam during the entire operation, making the chamber a drying oven, so that the articles to be disinfected are heated before the admission of steam to the inner chamber, and are dried at the end of the process.

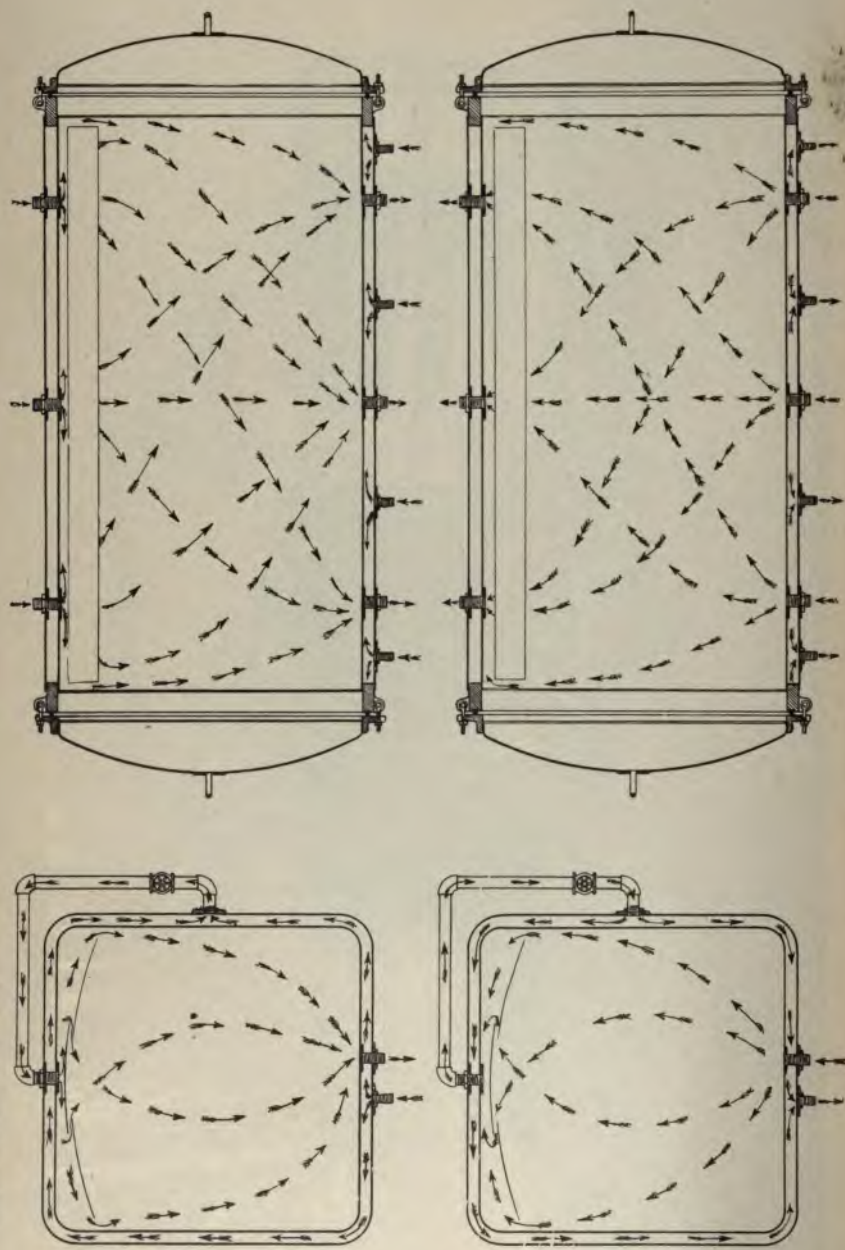
<sup>1</sup> Constructed by the Bureau for the World's Columbian Exposition and donated medical division of the immigration station at Ellis Island.





STEAM DISINFECTING CHAMBER (SMALL SIZE).





STEAM DISINFECTING CHAMBER, SHOWING CURRENTS OF STEAM. (See page 225.)

The chamber is also provided with a galvanized hood at its top, to prevent steam impinging directly upon the clothing; thermometers to register the temperature; gauges to indicate both vacuum and steam pressure, and safety valve to prevent overpressure in the chamber, the amount of pressure and temperature being regulated by a reducing valve in steam pipe from the boiler.

For convenience of handling the goods cars are provided of light wrought-iron construction, with removable trays, covered with galvanized screens and having bronze hooks at the top, permitting the articles to be laid out upon the trays or to be hung upon the hooks.

The doors at both ends allow the cars to be brought in at one end and removed at the other, thus securing complete isolation of the infected and disinfected articles. The cars, upon being unloaded, are returned to the working end of the chamber by means of transfer tables.

The system of piping is so arranged as to give thorough control of circulation. Steam may not only be admitted at the top or bottom at will, but may also be admitted at either end, on top, and discharged at opposite end on bottom, or vice versa, so that cross currents are obtained and the steam handled in any manner suited to obtain the best results from the articles being exposed.

The working of such a sterilizing chamber may be described as follows: The steam is generated in the boiler at high pressure and, by means of a reducing valve, is led to the chamber at the reduced pressure desired and allowed to circulate in the jacket.

While the jacket is being heated the infected goods are loaded upon the car; it is then pushed into the chamber, the door closed, and made steam and air tight.

When the thermometer indicates a temperature of 90° to 100° C. in the inner chamber, the vacuum is started and kept up until a negative pressure of 0.5 of an atmosphere is obtained. Then it is stopped and steam allowed to enter—slowly at first—and continued until there is a pressure of 0.5 of an atmosphere. The valves from the jacket are closed, while the vents are opened, so as to allow the steam to escape. The vacuum is again started and the above process is repeated. Then the steam is allowed to course through the chamber under about from 0.2 to 0.3 of an atmosphere, bringing into operation the alternating currents, so as to secure a full and perfect exposure of all parts of the articles to the current of steam. After about from seven to ten minutes close off the steam from the chamber proper, allowing it only to fill the jacket. The vacuum is again started, to remove any condensation which may have occurred.

The advantages of this chamber over others lie in its reliability, economy, simplicity, and convenience of working; the elimination of air by means of a pump; the thorough control of the steam and its direction of circulation; the large radiating surface in the jacket; the complete circulation of the steam, first through the jacket before entering the chamber; the use of steam of low pressure—little or no injury to the fabrics; thorough penetration of the articles by the current of steam.

The following is a copy of the specifications for the construction of a chamber 4 feet 4 inches by 5 feet 4 inches by 9 feet, together with the details with regard to cars and transfer tables:

#### SPECIFICATIONS OF STEAM CHAMBER, CARS, AND TRANSFER TABLES.

Chamber to be rectangular, with rounded corners, 6 inches and 3 inches radii, respectively, 4 feet 4 inches wide and 5 feet 4 inches high, inside measurement, 9 feet long, face to face of end frames.

To be constructed with an inner and an outer shell of five-sixteenths inch flange steel, having a tensile strength of not less than 55,000 to 60,000 pounds per square inch of section and an elongation of not less than 25 per cent measured in a space of 8 inches.

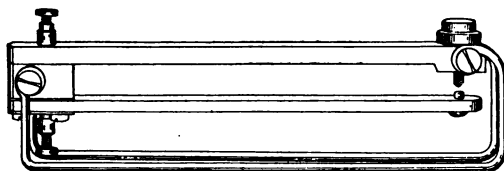
Reduction of area at point of fracture to be not less than 50 per cent. The said shells forming a steam jacket  $2\frac{1}{4}$  inches wide, strengthened by three-fourths inch steel screw stays, spaced as shown on drawing and supported by two braces extending around chamber, made of 5 by one-fourth inch flats, with two angles, each  $2\frac{1}{4}$  by  $2\frac{1}{4}$  inches, the bottom of braces to have additional  $2\frac{1}{4}$ -inch angle bracing, as shown, to form supports of chamber. The end frames of chamber to be close-grained cast iron, free from seams or blowholes,  $2\frac{1}{4}$  inches thick,  $7\frac{1}{4}$  inches long, with lugs for  $22\frac{1}{4}$ -inch steel eyebolts to fasten doors, and dovetail groove cored to hold pure gum packing ring 1 inch square, which is to be furnished and fastened in place. (Drawings Nos. 1 and 2.) The doors to consist of close-grained cast-iron frames, free from seams or blowholes, truly planed, to which are to be riveted five-sixteenths-inch flange steel plates curved to the radii of the chamber as shown, and to be fitted with straps, chains, and link for attachment to crane. Two ratchet wrenches to be furnished to quickly fasten eyebolts of door. The center of doors to be fitted with 1-inch pipe for thermometers. The chamber to have flanged openings as shown, for the several pipe connections, tapped true and straight, with standard pipe threads of the several sizes noted, and to be fitted with threefold hood of No. 18 galvanized sheet iron, securely held in place, extending full length of chamber and with the wrought-iron straps and bands necessary to hold nonconducting covering in place.

*Cars.*—The two cars to be 7 feet  $6\frac{1}{4}$  inches long, 3 feet 4 inches wide, and 5 feet high, each, of angle-iron construction, of shapes and sizes shown, supported by two pairs of cast-iron wheels 9 inches in diameter with  $1\frac{1}{4}$ -inch square axles, bottom covered by galvanized iron screens one-eighth-inch wire, 1-inch mesh, securely fastened in place, top to have three wooden bars of cypress to which are fastened 32 bronze wardrobe hooks, spaced alternately 8 inches apart. Three removable trays, framed of  $1\frac{1}{4}$  by  $1\frac{1}{4}$  inch angles, miter joints to be furnished for each car and covered by galvanized screens, the same as specified for bottom of cars, and to be supported by  $1\frac{1}{4}$ -inch angles riveted to end of frames.

*Transfer tables.*—The two transfer tables to be 7 feet 7 inches long, to support track of 3-foot  $7\frac{1}{4}$ -inch gauge and consist each of two 4-inch I-beams with four transverse braces of 3-inch angles, carrying two pairs of cast-iron grooved wheels 7 inches in diameter and diagonal bracing of 2 by one-half inch flats, as shown. The tables to be fitted with T-bar tracks and swing sections 18 inches long for chambers, the pins holding them in position on table to be fastened to beam by chain.

The details in connection with the steam chamber on board the disinfecting barge *Zamora*, with cut and explanations, have been furnished by the Kensington Engine Works, to illustrate the method of operating this particular chamber.

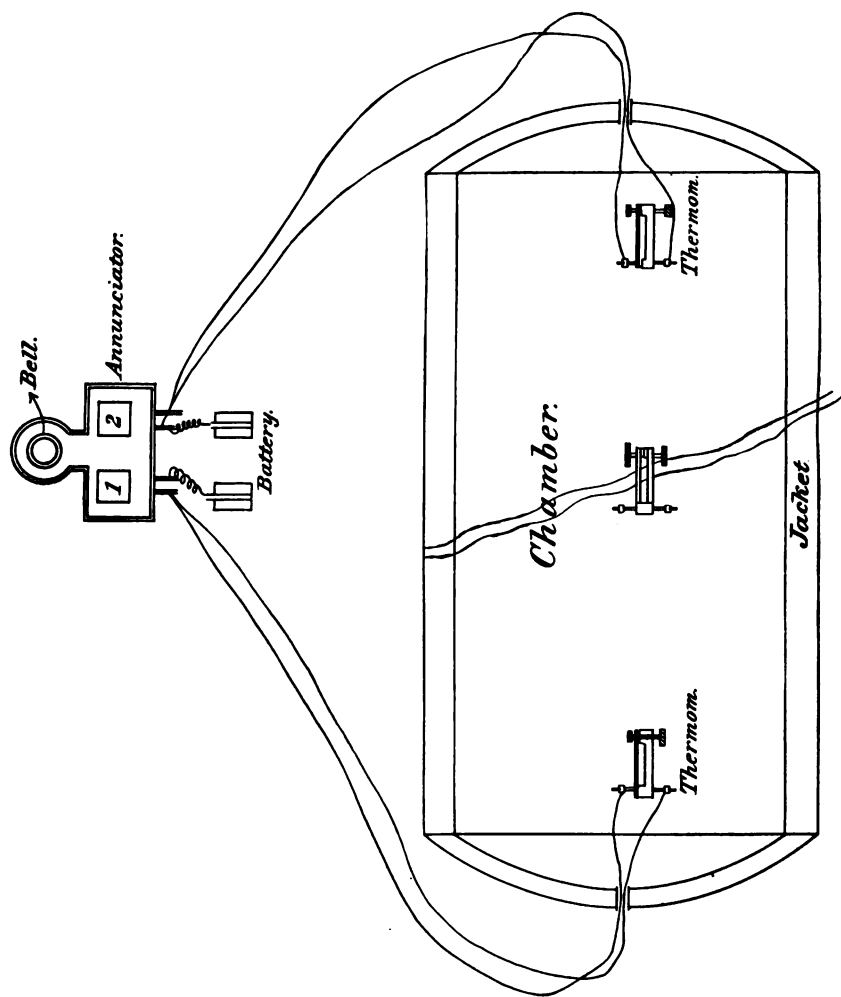
An electrical thermometer for indicating the temperature within



the chambers has been devised and practically tested by Dr. Kin-youn. The accompanying cut and the description are sufficiently explanatory.

N  
1  
2  
3  
4  
5  
6  
Nos.





SCHEME FOR INSTALLATION OF ELECTRIC THERMOMETERS IN STEAM DISINFECTING CHAMBERS.

## ELECTRICAL THERMOMETERS FOR STEAM CHAMBERS.

The thermometer is of the kind known as "metallic," its operation depending on the expansion of a compound bar composed of metals of a dissimilar index of expansion under the influence of heat. The metals selected in the particular instrument under consideration are brass and zinc.

The compound bar is mounted on a frame of brass, and is secured rigidly at one end. The other end is free, and is furnished with a platinum-pointed set screw, for convenience of adjustment to the desired temperature. Situated in apposition to the adjustable set screw is another platinum-pointed screw, and by the contact of these points, produced by the expansion of the compound bar, the electrical circuit is completed and an alarm is sounded upon the bell of the indicator. Upon the fall of the temperature the bar contracts, the circuit is broken, and the ringing of the bell ceases. For the adjustment of wires for the conduction of the electric current binding posts are furnished and placed in position above and below the point on the frame where the compound bar is secured.

*To set the thermometer.*—The instrument is to be adjusted to the temperature of boiling water (100° C.), or a higher temperature may be indicated by making the adjustment in brine the temperature of which is observed by means of an ordinary mercurial thermometer. Connect the thermometer, by means of insulated wires, with the bell and the battery; immerse the thermometer in water or in brine and bring to boiling, observing by thermometer (mercurial) the attainment of the desired temperature. When this point is reached the set screw is to be adjusted to complete the circuit, and the instrument is now set for this temperature, and the screw can be secured in the position by a jamb nut.

The outfit for each steam disinfecting chamber consists of two metallic thermometers, two cells of Laclanche battery, an annunciator with two drops and an alarm gong or bell, together with 100 feet of insulated wire. It is suggested that the thermometers be placed in different parts of the chamber, as at one end near the door, and the other nearer the center of the chamber, and that the wires connected thereto be brought out of the thermometer openings at the center of the chamber doors, the openings around the wires being filled with cotton waste, tightly packed. One end of the chamber can be designated as No. 1 and the other as No. 2, and the annunciator and battery can be secured in a convenient position on the wall of the disinfecting shed. It is believed that the action of these thermometers will prove more satisfactory and reliable in practice than mercurial thermometers placed in the door openings of the chambers.

## PORTABLE DISINFECTING APPARATUS.

At the conclusion of the Brunswick epidemic it became necessary to disinfect clothing, bedding, etc., taken from all suspected houses both in Brunswick and Jesup. For this purpose the steam disinfecting car which had been constructed by Surgeon Carter was taken first to Jesup and afterwards to Brunswick, and the work of disinfection thoroughly performed. In the performance of this duty, however, it became evident that a substantial portable steam disinfecting chamber and portable sulphur fumigating furnace should be possessed by the Marine Hospital Bureau, so that when called upon for assistance, particularly in localities unprovided with these appurtenances, prompt assistance might be given. Therefore an allotment from the epidemic fund was asked for and approved by yourself for the purpose of constructing said disinfecting apparatus. Both have been completed, and one, the

steam disinfecting chamber, was immediately put into use after completion, being required in the city of Washington, which was unprovided with any steam disinfector, in suppressing the threatened epidemic of smallpox. A description of each apparatus follows:

PORTABLE STEAM DISINFECTOR.

Consists, as seen by cuts, of a beam frame mounted upon running gear, carrying the chamber, pump, coal and water tank, and the locker-box seat. The chamber is composed of double steel shells, with door at one end, handled by a crane attached to chamber itself, and has removable track, with stand adjustable for the irregularities of the roadway, with a galvanized car of size to take single or double mattresses.

The piping is arranged to give thorough control of the steam circulation, and has reducing valve, thermometer, vacuum and pressure gauges, and safety valve.

The boiler and pump are easy of access for working, and arranged as compactly as possible.

This apparatus may be kept at the hospital or other convenient place for stationary use, or hauled to infected district in case of epidemic.

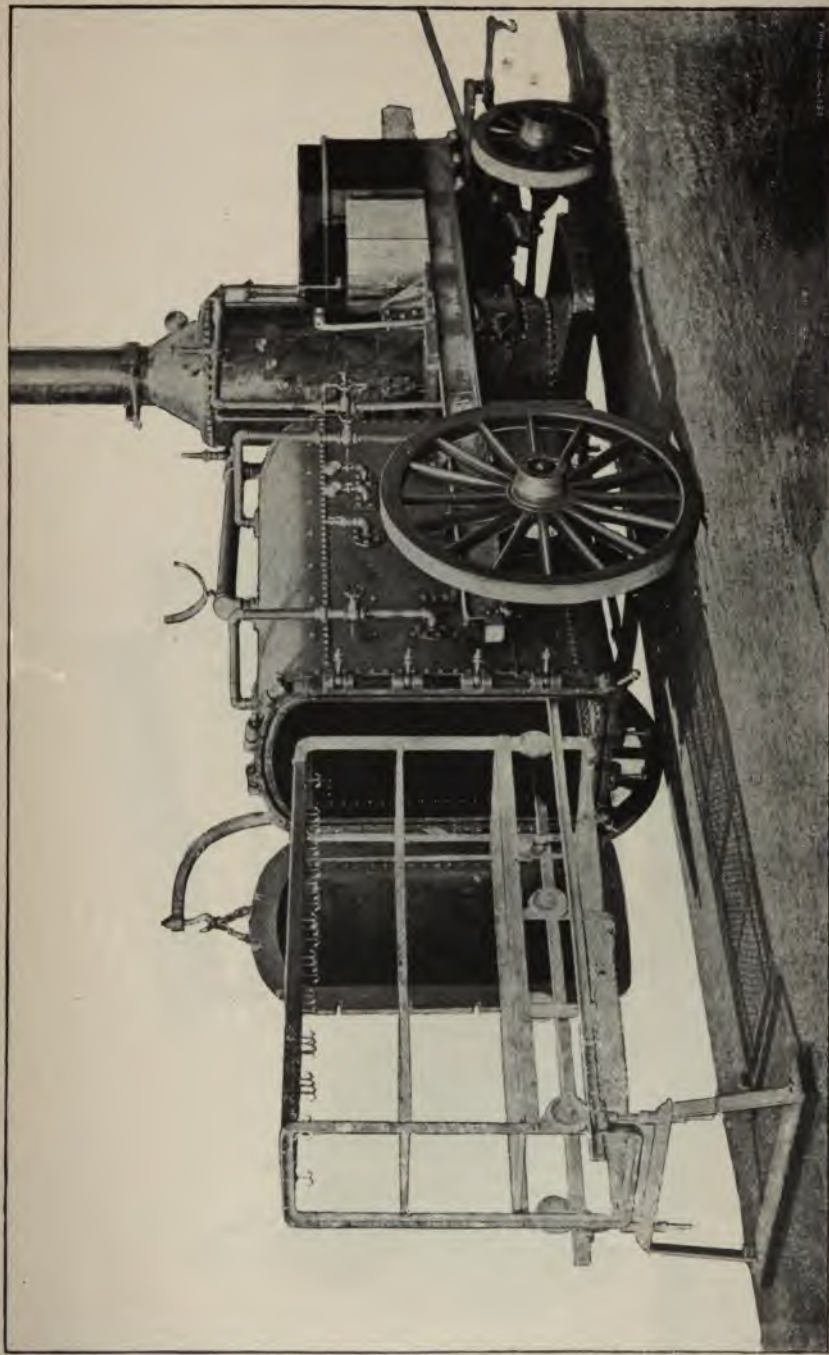
PORTABLE SULPHUR FUMIGATOR.

Consists, as seen by cuts, of a beam frame mounted upon running gear, carrying the furnace, boiler, engine, fan, coal and water tank, and locker box-seat.

The furnace is of special design, with fire and smoke box at one end, the sulphur being held in cast-iron pan, the dioxid fumes, upon being generated, traveling the full length of furnace and return, thence to reservoir on top, arranged with baffle plates, from which it is sucked by fan run by rapid-speed engine.

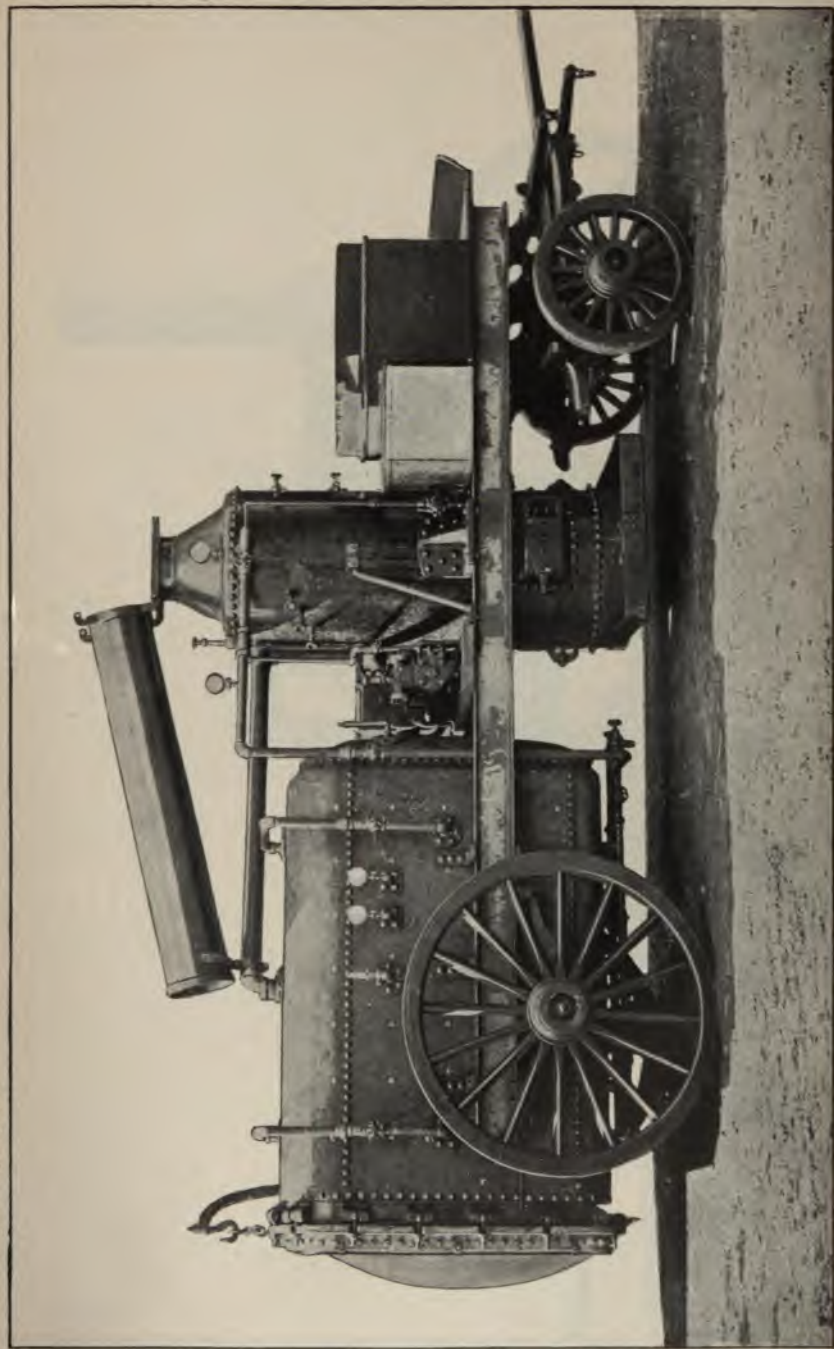
To continue the operation without opening the doors and causing rapid combustion, a double-winged stoker is provided, by which additional sulphur can be introduced into the pan. Two lengths of hose of special construction are also provided to convey the fumes into the building being fumigated.

Marine Hospital Report, 1894.



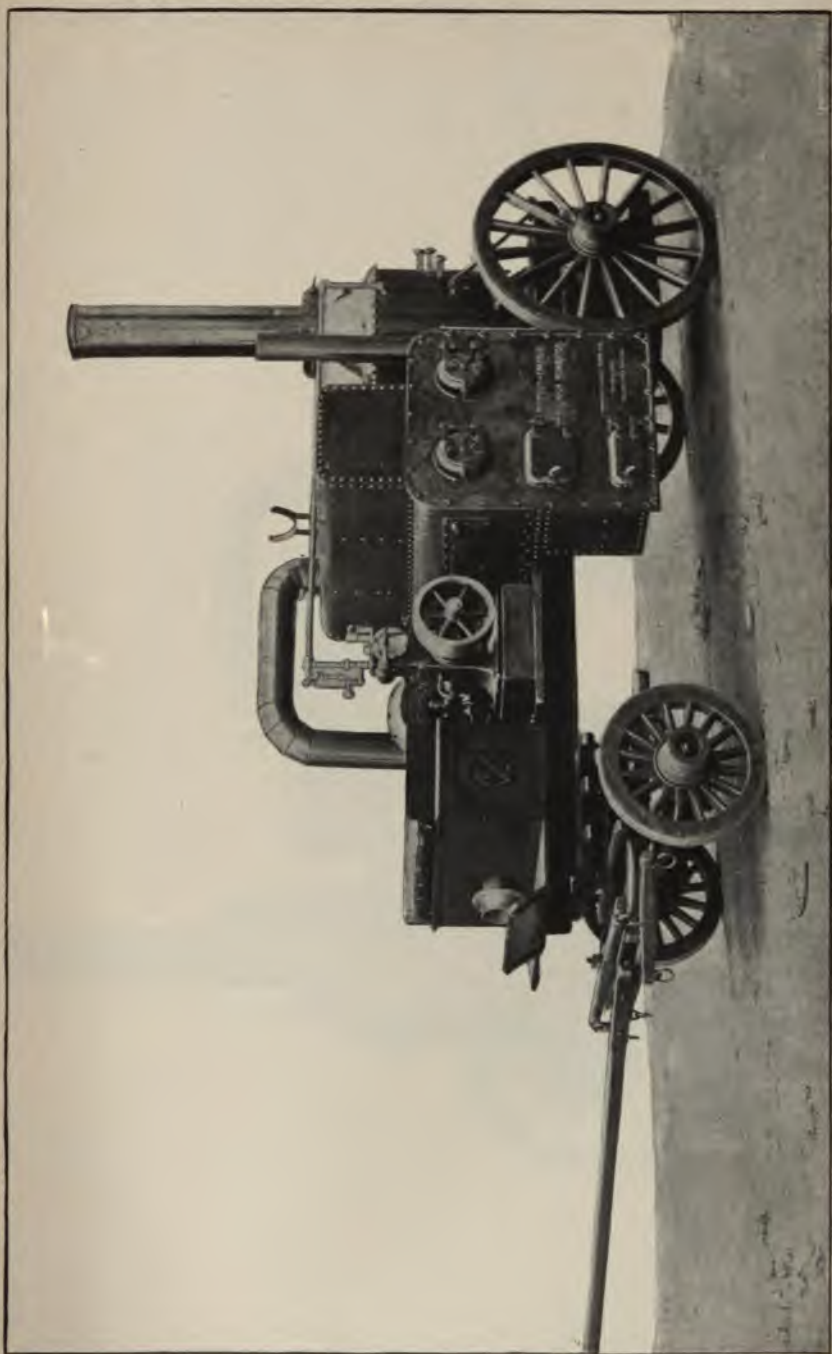
PORTABLE STEAM DISINFECTOR. KINYOUN-FRANCIS PATTERN. DESIGNED FOR U. S. MARINE-HOSPITAL SERVICE. (READY FOR SERVICE.)





PORTABLE STEAM DISINFECTOR, KINYOUN-FRANCIS PATTERN, DESIGNED FOR U. S. MARINE-HOSPITAL SERVICE. (CLOSED FOR REMOVAL.)

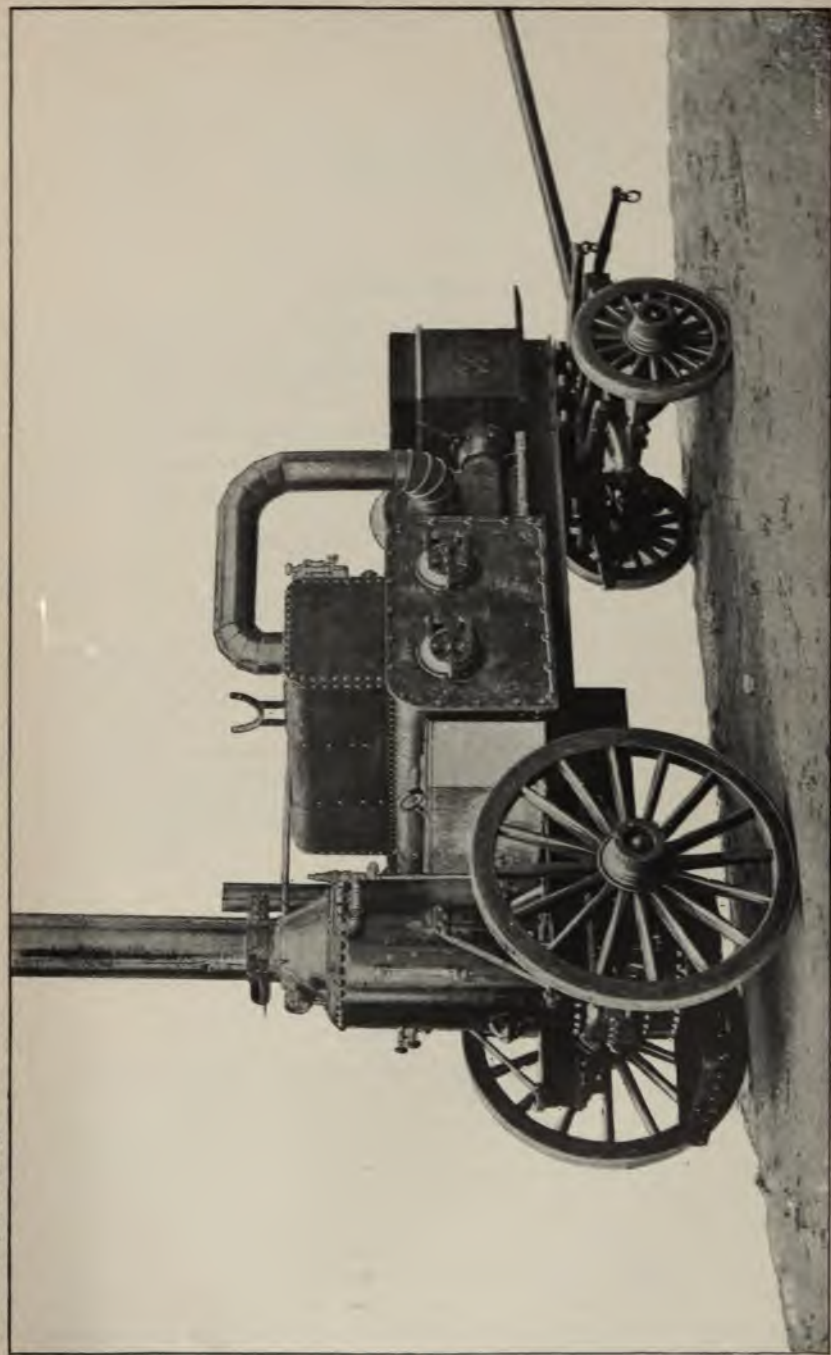




PORTABLE SULPHUR FUMIGATOR, KINYOUN-FRANCIS PATTERN, DESIGNED FOR U. S. MARINE-HOSPITAL SERVICE.

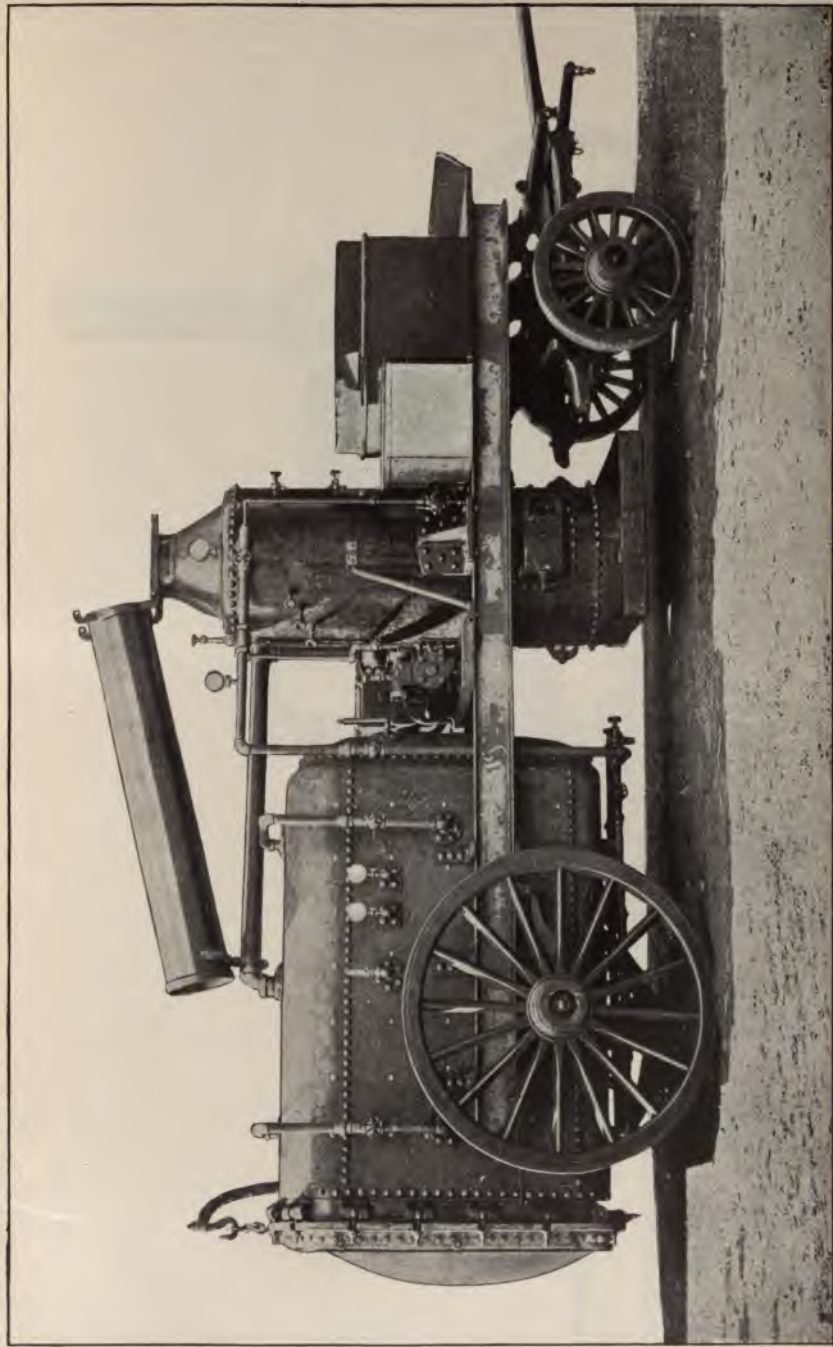






PORTABLE SULPHUR FUMIGATOR. (REAR SIDE.)





PORTABLE STEAM DISINFECTOR, KINYOUN-FRANCIS PATTERN, DESIGNED FOR U. S. MARINE-HOSPITAL SERVICE. (CLOSED FOR REMOVAL.)

SEC. 2. That any vessel at any foreign port clearing for any port or place in the United States shall be required to obtain from the consul, vice-consul, or other consular officer of the United States at the port of departure, or from the medical officer where such officer has been detailed by the President for that purpose, a bill of health, in duplicate, in the form prescribed by the Secretary of the Treasury, setting forth the sanitary history and condition of said vessel, and that it has in all respects complied with the rules and regulations in such cases prescribed for securing the best sanitary condition of the said vessel, its cargo, passengers, and crew; and said consular or medical officer is required, before granting such duplicate bill of health, to be satisfied that the matters and things therein stated are true; and for his services in that behalf he shall be entitled to demand and receive such fees as shall by lawful regulation be allowed, to be accounted for as is required in other cases.

The President, in his discretion, is authorized to detail any medical officer of the Government to serve in the office of the consul at any foreign port for the purpose of furnishing information and making the inspection and giving the bills of health hereinbefore mentioned. Any vessel clearing and sailing from any such port without such bill of health, and entering any port of the United States, shall forfeit to the United States not more than five thousand dollars, the amount to be determined by the court, which shall be a lien on the same, to be recovered by proceedings in the proper district court of the United States. In all such proceedings the United States district attorney for such district shall appear on behalf of the United States; and all such proceedings shall be conducted in accordance with the rules and laws governing cases of seizure of vessels for violation of the revenue laws of the United States.

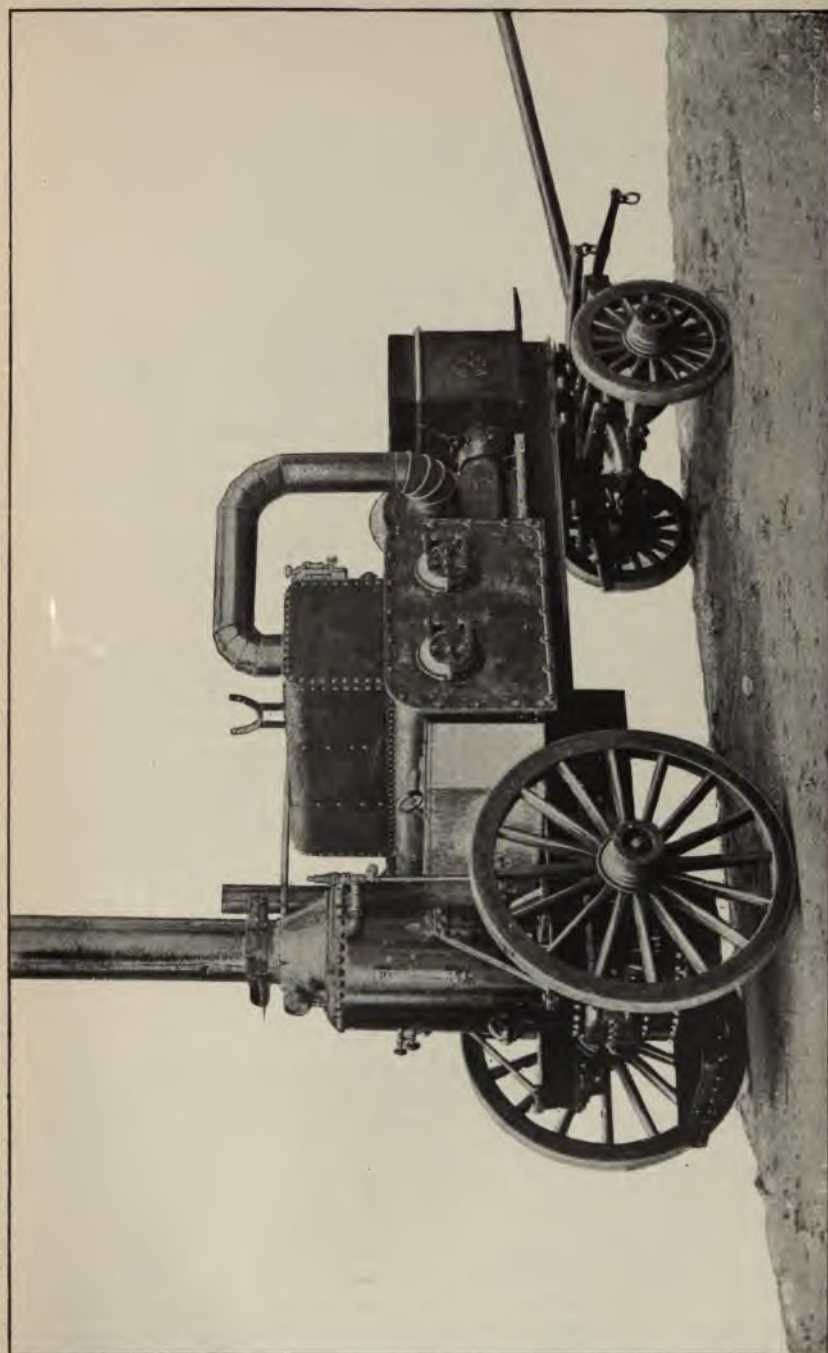
SEC. 3. That the Supervising Surgeon-General of the Marine-Hospital Service shall, immediately after this act takes effect, examine the quarantine regulations of all State and municipal boards of health, and shall, under the direction of the Secretary of the Treasury, cooperate with and aid State and municipal boards of health in the execution and enforcement of the rules and regulations of such boards and in the execution and enforcement of the rules and regulations made by the Secretary of the Treasury to prevent the introduction of contagious or infectious diseases into the United States from foreign countries, and into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia; and all rules and regulations made by the Secretary of the Treasury shall operate uniformly and in no manner discriminate against any port or place; and at such ports and places within the United States as have no quarantine regulations under State or municipal authority, where such regulations are, in the opinion of the Secretary of the Treasury, necessary to prevent the introduction of contagious or infectious diseases into the United States from foreign countries, or into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia, and at such ports and places within the United States where quarantine regulations exist under the authority of the State or municipality which, in the opinion of the Secretary of the Treasury, are not sufficient to prevent the introduction of such diseases into the United States, or into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia, the Secretary of the Treasury shall, if in his judgment it is necessary and proper, make such additional rules and regulations as are necessary to prevent the introduction of such diseases into the United States from foreign countries, or into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia, and when said rules and regulations have been made they shall be promulgated by the Secretary of the Treasury and enforced by the sanitary authorities of the States and municipalities, where the State or municipal health authorities will undertake to execute and enforce them; but if the State or municipal authorities shall fail or refuse to enforce said rules and regula-

tions the President shall execute and enforce the same and adopt such measures as in his judgment shall be necessary to prevent the introduction or spread of such diseases, and may detail or appoint officers for that purpose. The Secretary of the Treasury shall make such rules and regulations as are necessary to be observed by vessels at the port of departure and on the voyage, where such vessels sail from any foreign port or place to any port or place in the United States, to secure the best sanitary condition of such vessel, her cargo, passengers, and crew; which shall be published and communicated to and enforced by the consular officers of the United States. None of the penalties herein imposed shall attach to any vessel or owner or officer thereof until a copy of this act, with the rules and regulations made in pursuance thereof, has been posted up in the office of the consul or other consular officer of the United States for ten days, in the port from which said vessel sailed; and the certificate of such consul or consular officer over his official signature shall be competent evidence of such posting in any court of the United States.

SEC. 4. That it shall be the duty of the Supervising Surgeon-General of the Marine Hospital Service, under the direction of the Secretary of the Treasury, to perform all the duties in respect to quarantine and quarantine regulations which are provided for by this act, and to obtain information of the sanitary condition of foreign ports and places from which contagious and infectious diseases are or may be imported into the United States, and to this end the consular officer of the United States at such ports and places as shall be designated by the Secretary of the Treasury shall make to the Secretary of the Treasury weekly reports of the sanitary condition of the ports and places at which they are respectively stationed, according to such forms as the Secretary of the Treasury shall prescribe; and the Secretary of the Treasury shall also obtain through all sources accessible, including State and municipal sanitary authorities throughout the United States, weekly reports of the sanitary condition of ports and places within the United States, and shall prepare, publish, and transmit to collectors of customs and to State and municipal health officers and other sanitarians weekly abstracts of the consular sanitary reports and other pertinent information received by him, and shall also, as far as he may be able, by means of voluntary coöperation of State and municipal authorities, of public associations, and private persons, procure information relating to the climatic and other conditions affecting the public health, and shall make an annual report of his operations to Congress, with such recommendations as he may deem important to the public interests.

SEC. 5. That the Secretary of the Treasury shall from time to time issue to the consular officers of the United States and to the medical officers serving at any foreign port, and otherwise make publicly known, the rules and regulations made by him, to be used and complied with by vessels in foreign ports, for securing the best sanitary condition of such vessels, their cargoes, passengers, and crew, before their departure for any port in the United States, and in the course of the voyage; and all such other rules and regulations as shall be observed in the inspection of the same on the arrival thereof at any quarantine station at the port of destination, and for the disinfection and isolation of the same, and the treatment of cargo and persons on board, so as to prevent the introduction of cholera, yellow fever, or other contagious or infectious diseases; and it shall not be lawful for any vessel to enter said port to discharge its cargo, or land its passengers, except upon a certificate of the health officer at such quarantine station certifying that said rules and regulations have in all respects been observed and complied with, as well on his part as on the part of the said vessel and its master, in respect to the same and to its cargo, passengers, and crew; and the master of every such vessel shall produce and deliver to the collector of customs at said port of entry, together with the other papers of the vessel, the said bills of health required to be obtained at the port of departure and the certificate herein required to be obtained from the health officer at the port of entry; and that the bills of health herein prescribed shall be considered as part of the





PORTABLE SULPHUR FUMIGATOR. (REAR SIDE.)





## UNITED STATES QUARANTINE LAWS AND REGULATIONS.

### REVISED REGULATIONS.

In the enforcement of the Quarantine Regulations of 1893, difficulty was experienced with regard to merchandise, and after mature deliberation I believed the Regulations could be modified in this regard and made less exacting without danger to the public health. Accordingly, with the assistance of a board of five medical officers, the Regulations were revised and promulgated as follows:

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,

*April 26, 1894.*

*To Officers of the Treasury Department,*

*Consular Officers, and others concerned:*

Pursuant to the act of Congress approved February 15, 1893, entitled "An act granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service," and other quarantine laws herewith published, the following regulations have been made and are hereby promulgated. The regulations to be observed at foreign ports shall take effect in said ports ten days after they have been posted in the office of the United States consul according to law, and all previous quarantine regulations to be observed in foreign ports will then cease to be operative. All previous United States quarantine regulations for domestic ports are hereby revoked.

J. G. CARLISLE, *Secretary.*

### QUARANTINE LAWS OF THE UNITED STATES.

AN ACT granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service.

[Approved, February 15, 1893.]

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That it shall be unlawful for any merchant ship or other vessel from any foreign port or place of [to] enter any port of the United States except in accordance with the provisions of this act and with such rules and regulations of State and municipal health authorities as may be made in pursuance of, or consistent with, this act; and any such vessel which shall enter, or attempt to enter, a port of the United States in violation thereof shall forfeit to the United States a sum, to be awarded in the discretion of the court, not exceeding five thousand dollars, which shall be a lien upon said vessel, to be recovered by proceedings in the proper district court of the United States. In all such proceedings the United States district attorney for such district shall appear on behalf of the United States; and all such proceedings shall be conducted in accordance with the rules and laws governing cases of seizure of vessels for violation of the revenue laws of the United States.

SEC. 2. That any vessel at any foreign port clearing for any port or place in the United States shall be required to obtain from the consul, vice-consul, or other consular officer of the United States at the port of departure, or from the medical officer where such officer has been detailed by the President for that purpose, a bill of health, in duplicate, in the form prescribed by the Secretary of the Treasury, setting forth the sanitary history and condition of said vessel, and that it has in all respects complied with the rules and regulations in such cases prescribed for securing the best sanitary condition of the said vessel, its cargo, passengers, and crew; and said consular or medical officer is required, before granting such duplicate bill of health, to be satisfied that the matters and things therein stated are true; and for his services in that behalf he shall be entitled to demand and receive such fees as shall by lawful regulation be allowed, to be accounted for as is required in other cases.

The President, in his discretion, is authorized to detail any medical officer of the Government to serve in the office of the consul at any foreign port for the purpose of furnishing information and making the inspection and giving the bills of health hereinbefore mentioned. Any vessel clearing and sailing from any such port without such bill of health, and entering any port of the United States, shall forfeit to the United States not more than five thousand dollars, the amount to be determined by the court, which shall be alien on the same, to be recovered by proceedings in the proper district court of the United States. In all such proceedings the United States district attorney for such district shall appear on behalf of the United States; and all such proceedings shall be conducted in accordance with the rules and laws governing cases of seizure of vessels for violation of the revenue laws of the United States.

SEC. 3. That the Supervising Surgeon-General of the Marine-Hospital Service shall, immediately after this act takes effect, examine the quarantine regulations of all State and municipal boards of health, and shall, under the direction of the Secretary of the Treasury, cooperate with and aid State and municipal boards of health in the execution and enforcement of the rules and regulations of such boards and in the execution and enforcement of the rules and regulations made by the Secretary of the Treasury to prevent the introduction of contagious or infectious diseases into the United States from foreign countries, and into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia; and all rules and regulations made by the Secretary of the Treasury shall operate uniformly and in no manner discriminate against any port or place; and at such ports and places within the United States as have no quarantine regulations under State or municipal authority, where such regulations are, in the opinion of the Secretary of the Treasury, necessary to prevent the introduction of contagious or infectious diseases into the United States from foreign countries, or into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia, and at such ports and places within the United States where quarantine regulations exist under the authority of the State or municipality which, in the opinion of the Secretary of the Treasury, are not sufficient to prevent the introduction of such diseases into the United States, or into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia, the Secretary of the Treasury shall, if in his judgment it is necessary and proper, make such additional rules and regulations as are necessary to prevent the introduction of such diseases into the United States from foreign countries, or into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia, and when said rules and regulations have been made they shall be promulgated by the Secretary of the Treasury and enforced by the sanitary authorities of the States and municipalities, where the State or municipal health authorities will undertake to execute and enforce them; but if the State or municipal authorities shall fail or refuse to enforce said rules and regula-

tions the President shall execute and enforce the same and adopt such measures as in his judgment shall be necessary to prevent the introduction or spread of such diseases, and may detail or appoint officers for that purpose. The Secretary of the Treasury shall make such rules and regulations as are necessary to be observed by vessels at the port of departure and on the voyage, where such vessels sail from any foreign port or place to any port or place in the United States, to secure the best sanitary condition of such vessel, her cargo, passengers, and crew; which shall be published and communicated to and enforced by the consular officers of the United States. None of the penalties herein imposed shall attach to any vessel or owner or officer thereof until a copy of this act, with the rules and regulations made in pursuance thereof, has been posted up in the office of the consul or other consular officer of the United States for ten days, in the port from which said vessel sailed; and the certificate of such consul or consular officer over his official signature shall be competent evidence of such posting in any court of the United States.

SEC. 4. That it shall be the duty of the Supervising Surgeon-General of the Marine Hospital Service, under the direction of the Secretary of the Treasury, to perform all the duties in respect to quarantine and quarantine regulations which are provided for by this act, and to obtain information of the sanitary condition of foreign ports and places from which contagious and infectious diseases are or may be imported into the United States, and to this end the consular officer of the United States at such ports and places as shall be designated by the Secretary of the Treasury shall make to the Secretary of the Treasury weekly reports of the sanitary condition of the ports and places at which they are respectively stationed, according to such forms as the Secretary of the Treasury shall prescribe; and the Secretary of the Treasury shall also obtain through all sources accessible, including State and municipal sanitary authorities throughout the United States, weekly reports of the sanitary condition of ports and places within the United States, and shall prepare, publish, and transmit to collectors of customs and to State and municipal health officers and other sanitarians weekly abstracts of the consular sanitary reports and other pertinent information received by him, and shall also, as far as he may be able, by means of voluntary coöperation of State and municipal authorities, of public associations, and private persons, procure information relating to the climatic and other conditions affecting the public health, and shall make an annual report of his operations to Congress, with such recommendations as he may deem important to the public interests.

SEC. 5. That the Secretary of the Treasury shall from time to time issue to the consular officers of the United States and to the medical officers serving at any foreign port, and otherwise make publicly known, the rules and regulations made by him, to be used and complied with by vessels in foreign ports, for securing the best sanitary condition of such vessels, their cargoes, passengers, and crew, before their departure for any port in the United States, and in the course of the voyage; and all such other rules and regulations as shall be observed in the inspection of the same on the arrival thereof at any quarantine station at the port of destination, and for the disinfection and isolation of the same, and the treatment of cargo and persons on board, so as to prevent the introduction of cholera, yellow fever, or other contagious or infectious diseases; and it shall not be lawful for any vessel to enter said port to discharge its cargo, or land its passengers, except upon a certificate of the health officer at such quarantine station certifying that said rules and regulations have in all respects been observed and complied with, as well on his part as on the part of the said vessel and its master, in respect to the same and to its cargo, passengers, and crew; and the master of every such vessel shall produce and deliver to the collector of customs at said port of entry, together with the other papers of the vessel, the said bills of health required to be obtained at the port of departure and the certificate herein required to be obtained from the health officer at the port of entry; and that the bills of health herein prescribed shall be considered as part of the

ship's papers, and when duly certified to by the proper consular officer or other officer of the United States, over his official signature and seal, shall be accepted as evidence of the statements therein contained in any court of the United States.

SEC. 6. That on the arrival of an infected vessel at any port not provided with proper facilities for treatment of the same, the Secretary of the Treasury may remand said vessel, at its own expense, to the nearest national or other quarantine station, where accommodations and appliances are provided for the necessary disinfection and treatment of the vessel, passengers, and cargo; and after treatment of any infected vessel at a national quarantine station, and after certificate shall have been given by the United States quarantine officer at said station that the vessel, cargo, and passengers are each and all free from infectious disease, or danger of conveying the same, said vessel shall be admitted to entry to any port of the United States named within the certificate. But at any ports where sufficient quarantine provision has been made by State or local authorities the Secretary of the Treasury may direct vessels bound for said ports to undergo quarantine at said State or local station.

SEC. 7. That whenever it shall be shown to the satisfaction of the President that by reason of the existence of cholera or other infectious or contagious diseases in a foreign country there is serious danger of the introduction of the same into the United States, and that notwithstanding the quarantine defense this danger is so increased by the introduction of persons or property from such country that a suspension of the right to introduce the same is demanded in the interest of the public health, the President shall have power to prohibit, in whole or in part, the introduction of persons and property from such countries or places as he shall designate and for such period of time as he may deem necessary.

SEC. 8. That whenever the proper authorities of a State shall surrender to the United States the use of the buildings and disinfecting apparatus at a State quarantine station, the Secretary of the Treasury shall be authorized to receive them and to pay a reasonable compensation to the State for their use, if in his opinion they are necessary to the United States.

SEC. 9. That the act entitled "An act to prevent the introduction of infectious or contagious diseases into the United States, and to establish a national board of health," approved March 3, 1879, be, and the same is hereby, repealed. And the Secretary of the Treasury is directed to obtain possession of any property, furniture, books, paper, or records belonging to the United States which are not in the possession of an officer of the United States under the Treasury Department which were formerly in the use of the National Board of Health or any officer or employé thereof.

#### REVISED STATUTES.

SEC. 4794. There shall be purchased or erected, under the orders of the President, suitable warehouses, with wharves and inclosures, where merchandise may be unladen and deposited, from any vessel which shall be subject to a quarantine or other restraint, pursuant to the health-laws of any State, at such convenient places therein as the safety of the public revenue and the observance of such health-laws may require.

SEC. 4795. Whenever the cargo of a vessel is unladen at some other place than the port of entry or delivery under the foregoing provisions, all the articles of such cargo shall be deposited, at the risk of the parties concerned therein, in such public or other warehouses or inclosures as the collector shall designate, there to remain under the joint custody of such collector and of the owner, or master, or other person having charge of such vessel, until the same are entirely unladen or discharged, and until the articles so deposited may be safely removed without contravening such health-laws. And when such removal is allowed, the collector having charge of such articles may grant permits to the respective owners or consignees, their factors or agents, to receive all merchandise which has been entered, and the duties accruing

upon which have been paid, upon the payment by them of a reasonable rate of storage; which shall be fixed by the Secretary of the Treasury for all public warehouses and inclosures.

SEC. 4796. The Secretary of the Treasury is authorized, whenever a conformity to such quarantines and health-laws requires it, and in respect to vessels subject thereto, to prolong the terms limited for the entry of the same, and the report or entry of their cargoes, and to vary or dispense with any other regulations applicable to such reports or entries. No part of the cargo of any vessel shall, however, in any case, be taken out or unladen therefrom, otherwise than is allowed by law, or according to the regulations hereinafter established.

SEC. 4797. Whenever, by the prevalence of any contagious or epidemic disease in or near the place by law established as the port of entry for any collection district, it becomes dangerous or inconvenient for the officers of the revenue employed therein to continue the discharge of their respective offices at such port, the Secretary of the Treasury, or, in his absence, the First Comptroller, may direct the removal of the officers of the revenue from such port to any other more convenient place, within, or as near as may be to, such collection district. And at such place such officers may exercise the same powers, and shall be liable to the same duties, according to existing circumstances, as in the port or district established by law. Public notice of any such removal shall be given as soon as may be. [See § 1776.]

SEC. 4798. In case of the prevalence of a contagious or epidemic disease at the seat of Government, the President may permit and direct the removal of any or all the public offices to such other place or places as he shall deem most safe and convenient for conducting the public business. [See § 1776.]

SEC. 4799. Whenever, in the opinion of the Chief Justice, or, in case of his death, or inability, of the senior associate justice of the Supreme Court, a contagious or epidemic sickness shall render it hazardous to hold the next stated session of the court at the seat of Government, the chief or such associate justice may issue his order to the marshal of the Supreme Court, directing him to adjourn the next session of the court to such other place as such justice deems convenient. The marshal shall thereupon adjourn the court, by making publication thereof in one or more public papers printed at the seat of Government from the time he shall receive such order until the time by law prescribed for commencing the session. The several circuit and district judges shall, respectively, under the same circumstances, have the same power, by the same means, to direct adjournments of the several circuit and district courts to some convenient place within their districts respectively. [See § 1776.]

SEC. 4800. The judge of any district court, within whose district any contagious or epidemic disease shall at any time prevail, so as, in his opinion, to endanger the lives of persons confined in the prison of such district, in pursuance of any law of the United States, may direct the marshal to cause the persons so confined to be removed to the next adjacent prison where such disease does not prevail, there to be confined until they may safely be removed back to the place of their first confinement. Such removals shall be at the expense of the United States.

SEC. 4263. The master of any vessel employed in transporting passengers between the United States and Europe is authorized to maintain good discipline and such habits of cleanliness among the passengers as will tend to the preservation and promotion of health; and to that end he shall cause such regulations as he may adopt for this purpose to be posted up, before sailing, on board such vessel, in a place accessible to such passengers, and shall keep the same so posted up during the voyage. Such master shall cause the apartments occupied by such passengers to be kept at all times in a clean healthy state; and the owners of every such vessel so employed are required to construct the decks and all parts of the apartments so that they can be thoroughly cleansed; and also to provide a safe, convenient privy or water-closet for the exclusive use of every one hundred such passengers. The master shall also,

when the weather is such that the passengers cannot be mustered on deck with their bedding, and at such other times as he may deem necessary, cause the deck occupied by such passengers to be cleansed with chloride of lime or some other equally efficient disinfecting agent. And for each neglect or violation of any of the provisions of this section the master and owner of any such vessel shall be severally liable to the United States in a penalty of fifty dollars, to be recovered in any circuit or district court within the jurisdiction of which such vessel may arrive or from which she is about to depart, or at any place where the owner or master may be found.

[Extract from act August 1 1888.]

Whenever any person shall trespass upon the grounds belonging to any quarantine reservation, \* \* \* such person, trespassing, \* \* \* shall, upon conviction thereof, pay a fine of not more than three hundred dollars, or be sentenced to imprisonment for a period of not more than thirty days, or shall be punished by both fine and imprisonment, at the discretion of the court. And it shall be the duty of the United States attorney in the district where the misdemeanor shall have been committed to take immediate cognizance of the offense, upon report made to him by any medical officer of the Marine-Hospital Service, or by any officer of the customs service, or by any State officer acting under authority of section five of said act.

[Act March 27, 1890.]

AN ACT to prevent the introduction of contagious diseases from one State to another and for the punishment of certain offenses.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That whenever it shall be made to appear to the satisfaction of the President that cholera, yellow fever, smallpox or plague exists in any State or Territory, or in the District of Columbia, and that there is danger of the spread of such disease into other States, Territories, or the District of Columbia, he is hereby authorized to cause the Secretary of the Treasury to promulgate such rules and regulations as in his judgment may be necessary to prevent the spread of such disease from one State or Territory into another, or from any State or Territory into the District of Columbia, or from the District of Columbia into any State or Territory, and to employ such inspectors and other persons as may be necessary to execute such regulations to prevent the spread of such disease. The said rules and regulations shall be prepared by the Supervising Surgeon-General of the Marine Hospital Service under the direction of the Secretary of the Treasury. And any person who shall willfully violate any rule or regulation so made and promulgated shall be deemed guilty of a misdemeanor, and upon conviction shall be punished by a fine of not more than five hundred dollars, or imprisonment for not more than two years, or both, in the discretion of the court.

SEC. 2. That any officer, or person acting as an officer, or agent of the United States at any quarantine station, or other person employed to aid in preventing the spread of such disease, who shall willfully violate any of the quarantine laws of the United States, or any of the rules and regulations made and promulgated by the Secretary of the Treasury as provided for in section 1 of this act, or any lawful order of his superior officer or officers, shall be deemed guilty of a misdemeanor, and upon conviction shall be punished by a fine of not more than three hundred dollars or imprisonment for not more than one year, or both, in the discretion of the court.

SEC. 3. That when any common carrier or officer, agent, or employé of any common carrier shall willfully violate any of the quarantine laws of the United States, or the rules and regulations made and promulgated as provided for in section 1 of this act, such common carrier, officer, agent, or employé shall be deemed guilty of a misdemeanor, and shall, on conviction, be punished by a fine of not more than five hundred dollars, or imprisonment for not more than two years or both, in the discretion of the court.

# QUARANTINE REGULATIONS TO BE OBSERVED AT FOREIGN PORTS AND AT SEA.

## ARTICLE I.—BILLS OF HEALTH.

PAR. 1.—Masters of vessels departing from any foreign port for a port in the United States must obtain a bill of health in duplicate, signed by the proper officer or officers of the United States, as provided for by law.

The following form is prescribed:

PAR. 2.—Bill of health:

Form No. 1931a.

## UNITED STATES BILL OF HEALTH.

Name of vessel, \_\_\_\_\_. Nationality, \_\_\_\_\_. Rig, \_\_\_\_\_. Master, \_\_\_\_\_. Tonnage—gross, \_\_\_\_\_. net, \_\_\_\_\_. Iron or wood. Number of compartments for cargo, \_\_\_\_\_. for steerage passengers, \_\_\_\_\_. for crew, \_\_\_\_\_.  
 Name of medical officer, \_\_\_\_\_.  
 Number of officers, \_\_\_\_\_.  
 Number of crew, including petty officers, \_\_\_\_\_.  
 Number of passengers, cabin, \_\_\_\_\_.  
 Number of passengers, steerage, \_\_\_\_\_.  
 Number of persons on board all told, \_\_\_\_\_.  
 Port of departure, \_\_\_\_\_.  
 Where last from, \_\_\_\_\_.  
 Number of cases of sickness, and character, during last voyage, \_\_\_\_\_.  
 Vessel engaged in \_\_\_\_\_ trade, and plies between \_\_\_\_\_ and \_\_\_\_\_.  
 Sanitary condition of vessel, \_\_\_\_\_.  
 Nature, sanitary history, and condition of cargo, \_\_\_\_\_.  
 Source and wholesomeness of water supply, \_\_\_\_\_.  
 Source and wholesomeness of food supply, \_\_\_\_\_.  
 Sanitary history and health of officers and crew, \_\_\_\_\_.  
 Sanitary history and health of passengers, cabin, \_\_\_\_\_.  
 Sanitary history and health of passengers, steerage, \_\_\_\_\_.  
 Sanitary history and condition of their effects, \_\_\_\_\_.  
 Prevailing diseases at port and vicinity, \_\_\_\_\_.  
 Number of cases and deaths from the following-named diseases during the past two weeks:

Diseases.	No. of cases.	No. of deaths.
Yellow fever.....		
Asiatic cholera.....		
Cholera nostras or cholerae.....		
Smallpox.....		
Typhus.....		

Any conditions affecting the public health existing in the port of departure or vicinity to be here stated, \_\_\_\_\_.

I certify that the vessel has complied with the rules and regulations made under the act of February 15, 1893, and that the vessel leaves this port bound \_\_\_\_\_ for \_\_\_\_\_, United States of America, via \_\_\_\_\_.

Given under my hand and seal this \_\_\_\_\_ day of \_\_\_\_\_, 189-.

(Signature of consular officer:) \_\_\_\_\_,  
 \_\_\_\_\_.



PAR. 3. Vessels clearing from a foreign port for any port in the United States, and entering or calling at intermediate ports, must procure at all said ports a supplemental bill of health signed as provided in Article I. If a quarantinable disease has appeared on board the vessel after leaving the original port of departure, or other circumstances presumably render the vessel infected, the supplemental bill of health should be withheld until such sanitary measures have been taken as are necessary.

The following form is prescribed:

PAR. 4.—

SUPPLEMENTAL BILL OF HEALTH.

Port of ———.

Vessel ———, bound from ——— to ———, United States of America.

Sanitary condition of port, ———.

State diseases prevailing at port and in surrounding country, ———.

Number of cases and the deaths from the following-named diseases during the past two weeks:

Diseases.	No. of cases.	No. of deaths.	Remarks. (Any condition affecting the public health existing in the port to be stated here.)
Yellow fever.....			
Asiatic cholera or cholerae.....			
Smallpox.....			
Typhus.....			

*Number and sanitary condition of passengers taken on at this port, and sanitary condition of effects.*

Cabin, No. ———. Sanitary condition and history, ———.

Steerage, No. ———. Sanitary condition and history, ———.

(Cancel Form A, B, or C, as the case requires.)

Form.

A.—To the best of my knowledge and belief—

(Form A will be used at intermediate ports where the vessel does not enter and clear.)

B.—I have satisfied myself that—

(Form B will be used at intermediate ports where the vessel enters and clears.)

No quarantinable disease has appeared  
aboard since leaving ———.

C.—Since leaving ——— the following quarantinable disease has appeared on board ———, and I certify that the necessary sanitary measures have been taken.

I certify also that with reference to the passengers, effects, and cargo taken on at this port the vessel has complied with the rules and regulations made under the act of February 15, 1893.

Given under my hand and seal this — day of ———, 189—.

(Signature of consular officer:) ———, ———.

ARTICLE II.—INSPECTION.

PAR. 1. The officer issuing the bill of health will satisfy himself, by inspection if necessary, that the conditions certified to therein are true.

PAR. 2. Inspection is required of—

(a) All vessels from ports at which cholera prevails, or at which yellow fever, smallpox, or typhus fever prevails in epidemic form.

(b) All vessels carrying steerage passengers.

But the inspection of this class may be limited to said passengers and their living apartments, if from a healthy port.

PAR. 3. Inspection of the vessel is such an examination of the vessel, cargo, passengers, crew, personal effects of same, and including examination of manifests and other papers, food and water supply, as will enable him to determine if these regulations have been complied with.

PAR. 4. When an inspection is required, it should be made by daylight, as late as practicable before sailing. The vessel should be inspected before the passengers go aboard, the passengers just before embarkation, and the crew on deck; and no cargo or person should be allowed to come aboard after such inspection except by permission of the officer issuing the bill of health.

#### ARTICLE III.—REQUIREMENTS WITH REGARD TO VESSELS.

PAR. 1. Vessels, prior to stowing cargo or receiving passengers, shall be mechanically clean in all parts, especially the hold, forecastle, and steerage; the bilges and limbers free from odor and deposit. The air streaks should be sufficient in number and open for ventilation. Disinfection of the vessel may be required by the medical officer of the United States.

PAR. 2. If any infectious disease has occurred during the last voyage, the portions of the vessel liable to have been infected should be disinfected. When required, this should be done by one of the methods hereinafter described.

PAR. 3. The air space and ventilation must conform to the provisions of the act of Congress approved August 2, 1882, entitled "An act to regulate the carriage of passengers by sea."<sup>1</sup>

PAR. 4. The food and water supply should be sufficient, and water for drinking purposes, free from possibility of pollution, should be easily accessible.

PAR. 5. Vessels departing from a port where cholera prevails should have two medical officers if more than 250 steerage passengers are carried.

PAR. 6. All bedding provided for steerage passengers must be destroyed or disinfected before being again used or landed, and mattresses and pillows used by steerage passengers shall not be landed.

PAR. 7. The hospitals of vessels carrying steerage passengers should be located on the upper or second deck and not in direct communication with any steerage compartment.

PAR. 8. Excepting when absolutely required, no solid partitions should be placed in any steerage compartment, obstructing light and air.

#### ARTICLE IV.—CARGO.

PAR. 1. At ports infected with cholera, earth, sand, loam, soft or porous rock should not be taken as ballast. Nor at ports infected with yellow fever, should such ballast be allowed on board vessels clearing for ports south of the southern boundary of Maryland, when better material, such as hard rock, is obtainable, or when it is possible to use water ballast.

PAR. 2. Certain food products, viz, unsalted meats, sausages, dressed poultry, dried and smoked meats, rennets, fresh butter, fresh milk (unsterilized), fresh cheese, fresh bread, fresh vegetables, coming from cholera infected localities, or through such localities, if exposed to infection therein, should not be shipped.

PAR. 3. Fresh fruits from districts where cholera prevails shall be shipped only under such sanitary supervision as will enable the inspector to certify that they have not been exposed to infection.

PAR. 4. Articles of merchandise, personal effects, and bedding, coming from a district known to be infected, or as to the origin of which no positive evidence can be

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<sup>1</sup>Computation of air space in any steerage compartment must not include the space taken up by bunks, mattresses, life-preservers, or personal effects.

obtained, and which the consular or medical officer has reason to believe are infected, should be subjected to disinfection prior to shipment by processes prescribed for articles according to their class.

PAR. 5. New merchandise in general may be accepted for shipment without question; and articles of new merchandise, textile fabrics, and the like, which have been packed or prepared for shipment in an infected port or place, with a special view to protect the same from moisture incident to the voyage, may be accepted and exempted from disinfection.

PAR. 6. All rags and all textile fabrics used in the manufacture of paper, collected or packed in any foreign port or place, must, prior to shipment to the United States, be subjected to disinfection by one of the prescribed methods:

(Old jute bags, old cotton bags, old rope, new cotton and linen cuttings from factories, not included.)

PAR. 7. Rags, old jute, old gunny, old rope, and similar articles gathered or packed or handled in any port or place where cholera or yellow fever prevails, or smallpox or typhus fever prevails in epidemic form, should not be shipped until the officer issuing the bill of health shall be satisfied that the port or place has been for thirty days free from such infection, and after the disinfection of the articles.

PAR. 8. New feathers for bedding, human and other hair, unmanufactured, bristles, wool, hides not chemically cured, coming from a district where cholera prevails, shall be refused shipment until thirty days have elapsed since last exposure, unless unpacked and disinfected as hereinafter provided.

Feathers which have been used should be disinfected, and invariably by steam.

PAR. 9. The articles enumerated in the preceding paragraph, coming from a district where yellow fever prevails, destined for ports or places south of the southern boundary of Maryland during the quarantine season, or where smallpox or typhus fever prevails in epidemic form, should be refused shipment unless disinfected, as hereinafter provided.

PAR. 10. Articles such as gelatin, glue, glue stock, fish glue, fish bladders, fish skins, sausage casings, bladders, dried blood, having been in any way liable to infection in the process of preparation, gathering, or shipment, should be disinfected.

PAR. 11. Any covering shipped from or through an infected port or place, and which the consul or medical officer has reason to believe infected, should be disinfected.

PAR. 12. Any article presumably infected which can not be disinfected should not be shipped.<sup>1</sup>

#### ARTICLE V.—PASSENGERS AND CREW.

PAR. 1. Passengers, for the purposes of these regulations, are divided into two classes, cabin and steerage.

PAR. 2. No person suffering from a quarantinable disease, or scarlet fever, measles, or diphtheria, should be allowed to ship.

PAR. 3. Steerage passengers and crew, coming from districts where smallpox prevails in epidemic form, or who have been exposed to smallpox, shall be vaccinated before embarkation, unless they show evidence of immunity to smallpox by previous attack or recent successful vaccination.

PAR. 4. Steerage passengers and crew who, in the opinion of the inspecting officer, have been exposed to the infection of typhus fever, should not be allowed to embark for a period of at least fourteen days after such exposure and the disinfection of their baggage.

PAR. 5. When practicable, passengers should not ship from an infected port. Steerage passengers coming from cholera-infected districts must be detained five days in suitable houses or barracks located where there is no danger from infection,

<sup>1</sup> Upholstered furniture, sheepskins used as wearing apparel, bedding, bones, horns, and hoofs.

and all baggage disinfected as hereinafter provided; the said period of five days to begin only after the bathing of the passengers, disinfection of all their baggage and apparel, removal of all food brought with them, and isolation from others not so treated.

PAR. 6. Steerage passengers from districts not infected with cholera, shipping at a port infected with cholera, unless passed through without danger of infection and no communication allowed between passengers and the infected locality, should be treated as those in the last paragraph.

PAR. 7. Prior to sailing from ports infected with cholera, each passenger of the cabin class should produce satisfactory evidence as to his exact place of abode during the five days immediately preceding embarkation, and if it appears that he or his baggage has been exposed to contagion, such passenger should be detained such length of time as shall be deemed necessary by the inspecting officer, and the baggage should be disinfected.

PAR. 8. The rules prescribed for the disinfection of the baggage and personal effects of passengers and crew coming from cholera-infected ports should also be observed with regard to passengers and crew coming from ports and places where plague, yellow fever, typhus fever, or smallpox is prevailing in an epidemic form.

PAR. 9. Should cholera break out in the barracks or houses in which the passengers are undergoing the five days' observation, no passenger from said house or barracks should embark until five days' isolation from the last case and a repetition of the sanitary measures previously taken.

PAR. 10. All baggage of steerage passengers destined for the United States shall be labeled. If the baggage has been inspected and passed the label shall be a red label bearing the name of the port, the steamship on which the baggage is to be carried, the word "*inspected*" in large type, the date of inspection, and the seal or stamp of the consular or medical officer of the United States. All baggage that has been disinfected shall bear a yellow label, upon which shall be printed the name of the port, the steamship upon which the baggage is to be carried, the word "*disinfected*" in large type, the date of disinfection, and the seal or stamp of the consular or medical officer of the United States. It is understood, and it will be so printed on the blank, that the label is not valid unless bearing the consular or medical officer's stamp or seal.

PAR. 11. Each steerage passenger should be furnished with an inspection card (see form below). This card, stamped by the consular or medical officer, is to be issued to every member of a family as well as to the head thereof.

PAR. 12.

**INSPECTION CARD.**  
[Immigrants and steerage passengers.]

Port of departure, \_\_\_\_\_ Date of departure, \_\_\_\_\_

Name of ship, \_\_\_\_\_

Name of immigrant, \_\_\_\_\_ Last permanent residence, \_\_\_\_\_

Inspected and passed at _____	Passed at quarantine, port of _____, U. S. port of _____	Passed by Immigration Bureau, _____
[Seal or stamp of consular or med- ical officer.]	(Date.) _____	(Date.) _____

[The following to be filled in by ship's surgeon or agent prior to or after embarkation.]

Ship's list or manifest, \_\_\_\_\_ No. on ship's list or manifest, \_\_\_\_\_

Berth No.	Steamship inspection.	1st day.	2	3	4	5	6	7	8	9	10	11	12	13	14	
																To be punched by ship's surgeon at daily inspection.

## VACCINATED.

[Signature or stamp.]

[REVERSE SIDE.]

Keep this card to avoid detention at quarantine and on rail-roads in the United States.

Diese Karte muss aufbewahrt werden, um Aufenthalt an der Quarantine, sowie auf den Eisenbahnen der Vereinigten Staaten zu vermeiden.

Cette carte doit être conservée pour éviter une détention à la Quarantine, ainsi que sur les chemins de fer des États-Unis.

Deze kaart moet bewaard worden, ten einde oponthoud aan de Quarantijn, alsook op de ijzeren wegen der Vereenigde Staten te vermijden.

Conservate questo biglietto onde evitare detenzione alla Quarantina e sulle Ferrovie degli Stati Uniti.

Tento lístek musíte uschovati, nechcete-li ukarantény (zastavení ohledně zjištění zdraví) neb na dráze ve spojených státech zdržení býti.

Tuto kartučku treba trítat' u sebe aby sa predišlo zdržovanú v karantene aj na železnici ve Spojených Státoch.

PAR. 13. Cabin passengers from cholera-infected ports or places should be given a special inspection card, on which shall be printed the port of departure, name of passenger, name of ship, date of departure, and an indicated space for the seal or stamp of the consular or medical officer.

PAR. 14. The baggage of such cabin passengers shall be labeled in the same manner as steerage baggage.

PAR. 15. In a port where cholera prevails, or where yellow fever prevails in epidemic form, the crews of passenger ships should remain on board during their stay. Should additional men be shipped, the same precautions should be observed with them as in the case of steerage passengers. If it is considered necessary, the crews of freight ships may be similarly treated at the discretion of the medical officer.

PAR. 16. Passengers and crews, merchandise and baggage, prior to shipment at a noninfected port, but coming from an infected locality, should be subject to the same restrictions as are imposed in an infected port.

#### ARTICLE VI.—REQUIREMENTS AT SEA.

PAR. 1. The master of the vessel should cause the following rules (which comprise those recommended by the International Conference of Rome, 1885) to be observed during the voyage.

(a) The soiled body linen of passengers and crew suffering from infectious disease should be at once immersed in boiling water or in a disinfecting solution.

(b) The water-closets should be washed and disinfected twice a day.

(c) Rigorous cleanliness and free ventilation should be maintained during the voyage on board all ships.

PAR. 2. An inspection of the vessel, including the steerage, should be made by the ship's physician once each day.

PAR. 3. Should cholera (or cholerae), yellow fever, typhus fever, or smallpox appear on board a ship while at sea, those who first show symptoms of these diseases will be immediately sent to the hospital; the ship's physician will then immediately notify the captain, and all of the effects liable to convey infection, which have been in use, will be destroyed or disinfected.

PAR. 4. The compartments occupied by those who fall sick with infectious disease should be disinfected, and, as far as possible, the compartments thus disinfected should be freely exposed to the air. If the vessel is an iron steamer and the compartments suitable, the entire compartment should be disinfected by steam. The articles liable to convey infection should remain in the compartments during the disinfection. After disinfection of the compartments the bedding and clothing may be removed and dried.

PAR. 5. Patients with infectious disease should be isolated.

PAR. 6. The hospital should be disinfected as soon as it becomes vacant.

PAR. 7. The dead should be enveloped in a sheet saturated with one of the strong disinfecting solutions, without previous washing of the body, and at once placed in a coffin hermetically sealed, or buried at sea.

PAR. 8. A clinical record should be kept on the prescribed form, by the ship's surgeon, of all cases of sickness on board, and delivered to the quarantine officer at the port of arrival.

PAR. 9. Under the foregoing paragraphs disinfecting solutions are limited to the following: Strong—Acid solution of bichloride of mercury (1 to 500); a 1 to 20 solution of pure carbolic acid. Weak—Acid solution of bichloride of mercury (1 to 1,000); pure carbolic acid, 1 to 40.

## PAR. 10. (Form of clinical report:)\*

Name.	Age.	Sex.	Last permanent residence.	Date of admission.	Disease.	Discharged.	Result.
Clinical history.							
Clinical history.							
Clinical history.							
Clinical history.							
Clinical history.							

\* Temperature to be recorded.

PAR. 11. Sailing vessels leaving ports infected with yellow fever, and destined for any port in the United States south of the southern boundary of Maryland, which is not provided with proper facilities for treatment, shall, during the quarantine period, be directed by the consular or medical officer to proceed for disinfection and treatment to some quarantine station in the United States provided with the required facilities.

## ARTICLE VII.—DISINFECTION.

PAR. 1. The disinfection of iron vessels shall be as follows:

(a) *Holds*.—After mechanical cleansing, the hold to be thoroughly washed with an acid solution of bichloride of mercury, 1 to 800 (mercury 1 part, hydrochloric acid 2 parts, water 800 parts), applied under pressure to all surfaces by means of a hose.

## IN CASE THE DISINFECTION IS REQUIRED FOR YELLOW FEVER.

If the cargo is so stowed as to admit of disinfection, the hold and cargo may be disinfected without breaking bulk, by sulphur dioxide, 10 per cent per volume strength, forty-eight hours' exposure for iron, and seventy-two hours for wooden vessels.

(b) *Steerage and forecastle*.—The same treatment should be given the steerage and forecastle as the hold, but when practicable steam disinfection of these compartments should be practiced. The temperature in all parts of the compartments is to be not less than 100° C.

(c) *Cabins, officers' quarters, staterooms, etc.*—The bedding, fabrics, and carpets should be removed and disinfected by steam. After thorough mechanical cleansing, the exposed surfaces of fabrics, which cannot be removed, should be washed with a solution of bichloride of mercury,<sup>1</sup> 1 to 1,000, or 3 per cent solution of carbolic acid,

<sup>1</sup> Polished metal is injured by mercury, and leather by steam.



both of which should be removed, but not under two hours. Afterwards the apartments should be thoroughly dried and aired.

PAR. 2. The disinfection of wooden vessels is to be accomplished as follows: After mechanical cleansing, washing out the bilges until clean, etc. (first), by fumigation by sulphur dioxide, 10 per cent strength, twenty-four hours in the cabin and fore-castle and forty-eight hours in the hold; and (second), flushing or washing with acid solution of bichloride of mercury in large quantity (1 to 800). The bilges to be first flushed with sea water, pumped out, and then treated with the acid solution of bichloride of mercury in large quantity, allowed to remain in long contact. In addition to the sulphur fumigation of such apartments, the cabins, fore-castle, and other apartments, and their contents, to be treated as those on iron vessels.

#### CARGO.

PAR. 3. Disinfection of rags and old jute, etc., shall be by one of the following methods:

- (a) By boiling in water for not less than thirty minutes.
- (b) By steam at the temperature of  $100^{\circ}$  C. for not less than thirty minutes after such temperature is reached.
- (c) By exposure for not less than six hours in a closed compartment to a 4 per cent strength (per volume) of sulphur dioxide gas—made by burning roll sulphur or by the liberation of liquefied sulphur dioxide—allowance to be made for leakage by increasing the amount of sulphur.

PAR. 4. In all of the above methods, the rags, old jute, etc., must be unbaled, and in the disinfection by steam or sulphur the rags must be loosely spread on racks (preferably wire netting) in layers of not more than 6 inches in depth, and in such a manner as to insure the diffusion of the gas to all parts alike.

The articles must not at any time occupy more than 50 per cent of the total cubic space, and the exposure to date from the complete combustion of the sulphur.

PAR. 5. New feathers for bedding shall be disinfected by one of the following methods:

- (a) By steam at a temperature of  $100^{\circ}$  C. for a period of thirty minutes after such temperature has been reached.
- (b) By exposure to sulphur dioxide, 4 per cent strength per volume, for not less than six hours.

PAR. 6. Human hair or other hair, unmanufactured, and bristles, to be disinfected by sulphur dioxide, 4 per cent strength per volume, six hours, or, if not clean, by a solution of pure carbolic acid 4 per cent strength, the articles to be thoroughly saturated.

PAR. 7. Wool to be disinfected by sulphur dioxide, 4 per cent strength per volume, for not less than twenty hours, the wool to be unbaled and loosely spread on racks, as in the manner provided for the disinfection of rags.

PAR. 8. Hides to be disinfected by sulphur dioxide, 4 per cent strength per volume, for not less than twenty hours, or by thorough saturation with a solution of pure carbolic acid, 4 per cent strength; hides to be invariably unbaled for the purpose.

PAR. 9. Articles mentioned in paragraph 10, Article IV, should be disinfected by being spread on racks and exposed to sulphur dioxide, 4 per cent per volume, twenty hours.

PAR. 10. Coverings should be disinfected:

- (a) In the hold, by exposure to sulphur dioxide, 10 per cent strength per volume, for twelve hours; the cargo being so stowed as to allow access to all parts of such surfaces.
- (b) By breaking bulk and exposure to sulphur dioxide, 4 per cent strength per volume, for twenty-four hours.
- (c) By wetting thoroughly with solution of bichloride of mercury, 1 to 800.

PAR. 11. The disinfection of personal effects, prescribed by these regulations, should be as follows:

(A) Clothing and bedding should be disinfected by—(1) Exposure to steam from 100° to 102° C. for thirty minutes after such temperature is reached, or by boiling for thirty minutes. (2) Immersion in bichloride solution, 1 to 800, or solution of pure carbolic acid, 3 per cent, until thoroughly wetted, and allowed to dry before washing.

This last process (2) to be used only for articles that will be injured by steam or boiling.<sup>1</sup>

(B) Cooking and eating utensils should be immersed in boiling water.

NOTE.—A 4 per cent per volume strength of sulphur dioxide can be obtained by burning not less than 4 pounds 2 ounces of sulphur to each 1,000 cubic feet of space; the compartment to be air-tight.

A 10 per cent per volume strength can only be obtained by one of the following methods: By the use of a special furnace, or by liquefied sulphur dioxide gas.

#### ARTICLE VIII.—RECORDS, REPORTS, ETC.

The officer making the inspection will preserve in his office a record of each inspection made. A copy of said record will be forwarded weekly to the Supervising Surgeon-General of the Marine-Hospital Service, at Washington, D. C.

In addition to the duties already prescribed, the medical officer, when detailed in accordance with the act of Congress approved February 15, 1893, shall furnish such reports to the Supervising Surgeon-General Marine-Hospital Service as may be required by the latter.

#### NOTES FOR THE INFORMATION OF MASTERS OF VESSELS AND OTHERS.

##### FORMULÆ FOR STRONG DISINFECTING SOLUTIONS.

###### *Bichloride of mercury (1 to 500).*

	Parts.
Bichloride of mercury.....	1
Hydrochloric acid.....	2
Water.....	500
Mix.	

###### *Carbolic acid.*

Carbolic acid (pure).....	50
Warm water.....	1,000

##### FORMULÆ FOR WEAK SOLUTIONS.

###### *Bichloride of mercury (1 to 1,000).*

Bichloride of mercury.....	1
Hydrochloric acid.....	2
Water.....	1,000

###### *Carbolic acid.*

Carbolic acid (pure).....	25
Warm water.....	1,000

##### DISINFECTION OF HOSPITALS, INFECTED COMPARTMENTS, ETC.

(a) By steam, as provided in Article VII, paragraph (c); or, when steam is not available.

(b) By methods prescribed in Article VII, paragraphs (a) and (c).

*Water-closets, etc.*, should be disinfected by strong solution of bichloride of mercury or carbolic acid.<sup>2</sup>

<sup>1</sup>Articles of rubber, leather, celluloid, gutta-percha, hats, furs, skins, and similar articles are injured by steam or boiling.

<sup>2</sup>The use of these disinfecting solutions does not preclude the additional use of hypochlorite of lime.

It is suggested that a vessel should carry for every 100 passengers: Bichloride of mercury, 5 pounds; hydrochloric acid, 10 pounds; carbolic acid, 10 pounds.

## QUARANTINE REGULATIONS TO BE OBSERVED AT PORTS AND ON THE FRONTIERS OF THE UNITED STATES.

### PREAMBLE.

1. At or convenient to the principal ports of the United States, quarantine stations should be equipped with all appliances for the inspection and treatment of vessels, their passengers, crews, and cargoes.
2. At all other ports where such provisions have not been made inspection stations should be maintained.
3. An inspection service should be maintained at every port throughout the year.
4. At a fully equipped quarantine station there should be adequate provision for boarding and inspection, apparatus for mechanical cleaning of vessels, apparatus for steam disinfection, apparatus for disinfection with sulphur dioxide, apparatus for disinfecting solutions, hospitals for contagious and doubtful cases, detention barracks for suspects, bathing facilities, crematory, and sufficient supply of good water.
5. The personnel of quarantine stations in the yellow-fever zone and on fruiers bound for Southern ports should be immune against yellow fever.
6. At quarantine stations all articles liable to convey infection should be handled only by the employes of said station, unless the services of the crew are indispensable.
7. Vessels having been treated at national quarantine stations that are located a considerable distance from the ports of entry of said vessels may be inspected by the local quarantine officer, and, if for any sanitary reason it is considered inadvisable to admit the vessel, he should report the facts immediately, by telegraph, when possible, to the Supervising Surgeon-General Marine Hospital Service, detaining the vessel pending his action.
8. The following regulations are the required minimum standard and do not prevent the addition of such other rules as, for special reasons, may be legally made by State or local authorities.

### ARTICLE I.—INSPECTION.

1. Vessels arriving at ports of the United States under the following conditions shall be inspected by a quarantine officer prior to entry:
  - A. Any vessel with sickness on board.
  - B. All vessels from foreign ports.
  - C. Vessels from domestic ports where cholera or yellow fever prevails or where smallpox or typhus fever prevails in epidemic form.

EXCEPTIONS.—Vessels not carrying passengers on inland waters of the United States. Vessels from the Pacific and Atlantic coasts of British America, provided they do not carry persons or effects or persons nonresident in America for the sixty days next preceding arrival, and provided always that the port of departure be free from quarantinable disease. Vessels from other foreign ports via these excepted ports shall be inspected.

  - D. Vessels from foreign ports carrying passengers having entered a port of the United States without complete discharge of passengers and cargo. Such vessels shall be subject to a second inspection before entering any other port. Vessels from ports suspected of infection with yellow fever, having entered a port north of the southern boundary of Maryland without disinfection, shall be subjected to a second inspection before entering any port south of said latitude during the quarantine season of such port.
2. The inspections of vessels required by these regulations shall be made by daylight, except in case of vessels in distress.
3. In making the inspection of a vessel, the bill of health and clinical record of all cases treated during the voyage, crew and passengers' lists and manifests, and

when necessary the ship's log shall be examined. The crew and passengers shall be mustered and examined and compared with the lists and manifests, and any discrepancies investigated.

4. No person except the quarantine officer, his employés, United States customs officers, or agents of the vessel shall be permitted to board any vessel subject to quarantine inspection, until after the vessel has been inspected by the quarantine officer and given its discharge.

#### ARTICLE II.—QUARANTINE.

1. For the purpose of these regulations, the quarantinable diseases are cholera (cholérine), yellow fever, smallpox, typhus fever, and leprosy.

2. Vessels arriving under the following conditions shall be placed in quarantine:

A. With quarantinable disease on board.

B. Having had such on board during the voyage or within thirty days next preceding arrival; or, if arriving in the quarantine season, having had yellow fever on board after March 1 of the current year, unless satisfactorily disinfected thereafter.

C. From ports infected with cholera, or where typhus fever prevails in epidemic form, coming directly or via another foreign port, or via United States ports, unless they have complied with the United States quarantine regulations for foreign ports; also vessels from noninfected ports, but bringing persons or cargo from places infected with cholera, yellow fever, or where typhus fever prevails in epidemic form, except as subsequently noted.

D. From ports where yellow fever prevails, unless disinfected in accordance with these regulations, and not less than five days have elapsed since such disinfection.

EXCEPTIONS.—The following exceptions may be made to Rules C and D with regard to vessels from ports quarantined against on account of yellow fever:

(1) Vessels arriving during certain seasons of the year, to wit, from November 1 to May 1, may be admitted to entry.

(2) Vessels bound for ports in the United States north of the southern boundary of Maryland, with good sanitary condition and history, having had no sickness on board at ports of departure en route or on arrival, provided they have been five days from last infected or suspected port, may be allowed entry at port of destination. But if said vessels carry passengers destined for places south of this latitude the baggage of said passengers shall be disinfected.

In making an inspection of a vessel, if from a port where yellow fever prevails, and between May 1 and November 1 of any year, the inspector shall ascertain the destination of each passenger thereon, and if bound for places south of the southern boundary of Maryland the baggage of such passenger shall be disinfected according to the rules for such articles infected with yellow fever. Such baggage shall be labeled.

(3) Vessels engaged in the fruit trade from ports declared safe for this purpose by the Supervising Surgeon-General Marine-Hospital Service may be admitted to entry without detention, provided that they carry no passengers and have carried no passengers from one port to another and have no household effects or personal baggage in cargo, and have complied with the special rules and regulations made by the Secretary of the Treasury with regard to vessels engaged in said trade.

3. All persons arriving on vessels having had smallpox on board must be vaccinated or show satisfactory evidence of recent vaccination or of having had smallpox, or be detained in quarantine for not less than fourteen days, and all effects and compartments liable to convey infection disinfected.

4. All passengers occupying apartments other than first or second cabin shall be vaccinated prior to entry, unless they can show that they have had smallpox, or have been recently successfully vaccinated, or be detained in quarantine fourteen days.

5. Vessels arriving at quarantine with leprosy on board shall not be granted pratique until the leper with his or her baggage has been removed from the vessel to the quarantine station.

No case of leprosy will be landed.

If the leper is an alien passenger and the vessel is from a foreign port, action will be taken as provided by the immigration laws and regulations of the United States.

If the leper is an alien and a member of the crew and the vessel is from a foreign port, said leper shall be detained at the quarantine at the vessel's expense, until taken aboard by the same vessel when outward bound.

#### ARTICLE III.—GENERAL REQUIREMENTS AT QUARANTINES.

1. Pilots bringing infected vessels will be detained in quarantine a sufficient time to cover the period of incubation of the disease for which the vessel is quarantined, if, in the opinion of the quarantine officer, such pilots have been exposed to infection. The dunnage of pilots shall be disinfected when necessary.

2. No direct communication shall be allowed between quarantine, or any vessel in quarantine, and any person or place outside, and no communication except under the supervision of the quarantine officer.

3. No ballast shall be allowed to leave the quarantine station unless disinfected.

4. Where it is impossible to disinfect cargo *in situ*, it shall be removed and disinfected in the manner provided for articles of their class in these regulations; such articles to be unpacked and so arranged as to allow the disinfectant used to reach every part of all surfaces of said articles.

5. Vessels arriving at any port of the United States, having cholera or yellow fever aboard during the quarantine season, shall be remanded to an anchorage set apart for infected vessels, and there to remain until after the discharge of the passengers and purification of the vessel.

6. All passenger baggage disinfected under the requirements of these regulations shall be labeled.

#### ARTICLE IV.—TREATMENT IN QUARANTINE OF CHOLERA-INFECTED VESSELS.

1. Remove all passengers from the vessel and all of the crew (if cholera has occurred on board) save those necessary to care for her. Place the sick in hospital and carefully isolate those specially suspected. Segregate the remainder in small groups. No communication shall be held between these groups. Those believed to be especially capable of conveying infection must not enter the barracks until they are bathed and furnished with sterile clothing; nor shall any material capable of conveying infection be taken into the barracks, especially food.

2. If cholera has occurred in the steerage, all occupants thereof must be bathed and their clothing disinfected.

3. At once proceed with the disinfection of the hand baggage.

4. All baggage and effects accompanying steerage passengers, and any other baggage or effects that may have been exposed to infection, must be disinfected.

5. Such articles of cargo as are liable to convey infection must be disinfected.

6. All living apartments and furniture and such other portions of a vessel as are liable to convey infection shall be disinfected.

7. On cholera-infected vessels the water supply must be changed without delay, the casks or tanks disinfected by steam or 10 per cent solution of potassium permanganate, and after thorough rinsing refilled from a source of undoubted purity, or the water supplied must have been recently boiled.

8. Nothing shall be thrown overboard from a cholera-infected vessel, not even deck sweepings. Such things shall be burned in the furnace or in a place specially designated, but not in the galley.

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<sup>1</sup> It is required only if cholera has occurred on board.

## ARTICLE V.—DISINFECTION, ETC.

1. *Holds*.—The disinfection of iron vessels shall be as follows:

(a) With cargo: If cargo is so stowed as to admit of disinfection, it and the hold may be disinfected without breaking bulk, except to such a degree as to make disinfection practicable, by sulphur dioxide, 10 per cent per volume strength, for not less than twenty-four hours' exposure.

(b) Without cargo: After mechanical cleansing, the hold (1) to be thoroughly washed with an acid solution of bichloride of mercury, 1 to 800 (mercury 1 part, hydrochloric acid 2 parts, water 800 parts), applied under pressure to all surfaces by means of a hose; (2) by sulphur dioxide, 10 per cent per volume strength, for twenty-four hours.

2. *Steerage and forecabin*.—When possible to obtain it,

(a) The steerage and forecabin shall be disinfected by steam; the temperature in all parts of these compartments to be not less than 100° C. for not less than thirty minutes after such temperature has been reached.

(b) When steam can not be obtained these compartments shall be treated in the same manner as required in the disinfection of the empty hold.

3. All bedding and furnishings of the steerage and forecabin to be left in place during the disinfection by steam.

If steam disinfection of steerage is not used, such articles must be removed under the strictest sanitary precautions for disinfection by steam or burning.

4. The bedding, fabrics, and carpets should be removed and disinfected by steam or by boiling. After thorough mechanical cleansing the woodwork and all other exposed surfaces shall be washed with an acid solution of bichloride of mercury, 1 to 1,000, or a 3 per cent solution of pure carbolic acid. Fabrics which can not be removed shall be thoroughly saturated with a solution of bichloride of mercury, 1 to 1,000, or a 3 per cent solution of pure carbolic acid.

5. The water ballast of a vessel coming from a cholera-infected port should be discharged at sea, or, if discharged in fresh or brackish water, must be previously disinfected; the tanks to be flushed and refilled with sea water or disinfected.

6. For a wooden vessel the treatment is as above, except that exposure of the hold and living apartments to sulphur dioxide, 10 per cent volume, must precede the other treatment. This exposure must be, for the hold, forty-eight hours, and for living apartments, twelve hours.

7. All solid ballast to be discharged or disinfected previous to disinfection of hold. All ballast discharged in fresh water to be disinfected by saturation with or immersion in an acid solution of bichloride of mercury, 1 to 800. Clear, hard, close-grained rock may be permitted to remain on board, but only after disinfection by immersion in an acid solution, 1 to 800, of bichloride of mercury. Ballast removed from vessels must not be taken from the quarantine station.

## ARTICLE VI.—DETENTION OF PASSENGERS ON ACCOUNT OF CHOLERA.

1. The people detained shall be inspected by the physician twice daily, and be under his constant surveillance, and no intercourse will be allowed between different groups while in quarantine.

2. No direct communication shall be allowed between any person detained in quarantine and anyone not in quarantine, except through the quarantine officer or, by his order, through his agents.

3. The water and food supply will be strictly guarded to prevent contamination, and issued to each group separately.

4. Food of a simple character, sufficient in quantity, thoroughly cooked, shall be issued to those detained in quarantine. No fruit shall be permitted.

5. Cleanliness of quarters and of person shall be enjoined and enforced daily. Disinfection shall be used where there is any possibility of infection.

6. Water-closets, urinals, privies, or troughs shall be provided, and their contents disinfected before they are discharged.

7. In any group in which cholera appears the sick will be immediately isolated in hospital, and the remaining persons in the group shall be bathed and their effects be disinfected, then removed to other quarters, if possible, and the compartment disinfected.

8. No direct communication shall be allowed between the physician and attendants of the hospital and those detained in quarantine.

No persons shall be discharged from quarantine until five days have elapsed since the last exposure to infection and a final disinfection of such effects as were taken to barracks.

No convalescent from cholera shall be discharged from quarantine until after a sufficient time has elapsed to insure his freedom from infection.<sup>1</sup>

9. The body of no person dead of cholera shall be allowed to pass through quarantine. The body should be cremated if practicable. If not, it should be wrapped without preliminary washing in a sheet saturated with a solution of bichloride of mercury, 1 to 500, and buried, surrounded by caustic lime.

#### ARTICLE VII.—DISINFECTION OF PERSONAL EFFECTS OF PASSENGERS AND CREW AND CARGO.

1. Clothing, bedding, and articles not injured by steam shall be disinfected—

(a) By exposure to steam at a temperature of 100° to 102° C. for thirty minutes after such temperature has been reached.

(b) By boiling for fifteen minutes; all articles to be submerged.

(c) By a thorough saturation in a solution of bichloride of mercury, 1 to 1,000, and allowed to dry before washing.

2. Articles injured by steam (rubber, leather, etc.) and containers, to the disinfection of which steam is inapplicable, shall be disinfected by thoroughly wetting all surfaces with a solution of bichloride of mercury, 1 to 800, or a 5 per cent solution of carbolic acid, and allowed to dry in open air.

3. Cooking and eating utensils, by immersing in boiling water or steam.

4. All rags and old textile fabrics used in the manufacture of paper, and all old gunny, old jute, etc., fit only for remanufacture, gathered, collected, packed, or handled in any port or place where cholera (cholerine) or yellow fever exists, or where small-pox or typhus fever prevails in epidemic form, and for thirty days after the port or place shall be officially declared free from such diseases or epidemic, shall be denied entry into any port of the United States.

5. No rags or old textile fabrics used in the manufacture of paper, or articles enumerated in the preceding paragraph, which have not been disinfected in accordance with Article VII, paragraph 3, of the United States Quarantine Regulations for foreign ports, shall be admitted into the United States.

(Old jute bags; old cotton bags; old rope; new cotton and linen cuttings from factories, not included.)

#### ARTICLE VIII.—TREATMENT OF VESSELS INFECTED OR SUSPECTED OF BEING INFECTED WITH YELLOW FEVER.

1. Where practicable, at once remove the sick to hospital; remove and isolate all persons not required for the care of the vessel.

2. If the hold is deemed infected, there shall be a preliminary disinfection as hereinafter provided.

3. The bilge should be cleansed with sea water, if possible, before disinfection, and the hold rendered mechanically clean.

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<sup>1</sup> To be determined by bacteriological examination.

4. All ballast, except close-grained, hard rock, must be discharged. This may be retained aboard if disinfected by immersion in an acid solution of bichloride of mercury, 1 to 800.

5. After discharge or disinfection of ballast the vessel should be disinfected.

6. If it is so stowed as to admit of disinfection, the cargo and the hold may be disinfected without breaking bulk, except to such a degree as to render disinfection practicable.

It shall be as follows:

Holds to be treated with sulphur dioxide, 10 per cent strength per volume, forty-eight hours' exposure for iron vessels, seventy-two hours' exposure for wooden vessels.

7. Empty holds to be disinfected as follows:

(a) If of iron, by sulphur dioxide gas, 10 per cent strength per volume, for twelve hours' exposure, followed by washing with an acid solution of bichloride of mercury, 1 to 800, applied under pressure to all surfaces by means of a hose.

(b) If of wood, by the same methods as the preceding, save that the exposure to sulphur dioxide gas shall be for forty-eight hours; air streaks to be open.

8. Cabin, forecastle, etc., after mechanical cleansing, to be first treated with sulphur dioxide, not less than 6 per cent strength per volume, twenty-four hours' exposure. Then (after cleansing with water, if desired), wash all exposed surfaces with a solution of bichloride of mercury, 1 to 800, or pure carbolic acid, 3 per cent.

9. Clothing, bedding, and all fabrics which can be removed, not injured by steam, shall be disinfected.

(a) By exposure to steam at a temperature of 100° to 102° C. for thirty minutes after such temperature has been reached.

(b) By boiling for fifteen minutes; all articles to be submerged.

(c) By a thorough saturation in a solution of bichloride of mercury, 1 to 1,000, and allowed to dry before washing.

10. Articles injured by steam (rubber, leather, etc.), and containers, to the disinfection of which steam is inapplicable, shall be disinfected by (a) thoroughly wetting all surfaces with a solution of bichloride of mercury, 1 to 800, or a 5 per cent solution of pure carbolic acid, and allowed to dry in open air; or (b) by exposure to the sulphur fumigation, in cabin, forecastle, or hold.

11. The personnel of the vessel shall be detained five days from completion of the disinfection.

12. If the vessel has been disinfected under the supervision of an accredited medical officer of the United States at the port of departure, the period of quarantine may date from completion of such disinfection, and shall not be less than five days.

#### ARTICLE IX.

Passenger traffic may be allowed during the quarantine season from any port infected with yellow fever to any port of the United States south of the southern boundary of Maryland, under the following conditions:

(a) Vessels to be of iron and clean immediately prior to taking on passengers.

(b) The vessel must lie at moorings in the open harbor and not approach the wharves, nor must the crew be allowed ashore at the port of departure.

(c) All passengers and crew must be immune to yellow fever and so certified by the United States medical officer.<sup>1</sup>

(d) All baggage which has not been disinfected at the port of departure by the United States medical officer, or which is not in bond for points north of the southern boundary of Maryland, shall be disinfected at the quarantine at the port of arrival; no bedding or household effects to be allowed to enter.

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<sup>1</sup> The evidence of immunity which may be accepted by the sanitary inspector is:  
**First.** Proof of continued residence in an endemic focus of yellow fever for ten years.  
**Second.** Proof of previous attack of yellow fever.



## ARTICLE X.—MISCELLANEOUS.

1. The treatment of vessels infected with typhus fever shall be the same as that prescribed for yellow fever.

2. The detention of passengers and crew for smallpox and typhus fever shall cover the period of incubation of the disease, the time of detention to commence from the date of last exposure; typhus fever, not less than twenty days; smallpox, not less than fourteen days.

3. Vessels detained at any national quarantine will be subject to such additional rules and regulations as may be promulgated from time to time by the Supervising Surgeon-General.

4. The following is the form of certificate which shall be issued to the vessel by the health officer when she is released from quarantine:

I CERTIFY that ———, of ———, from ———, 189—, has in all respects complied with the quarantine regulations prescribed by the Secretary of the Treasury, and that in my opinion she will not convey quarantinable disease. Said vessel is this day granted free pratique.

—————,  
Health (Quarantine) Officer, Port of ———.

## ARTICLE XI.—INSPECTION OF STATE AND LOCAL QUARANTINES.

In the performance of the duties imposed upon him by the act of February 15, 1893, the Supervising Surgeon-General of the Marine-Hospital Service shall, from time to time, personally or through a duly detailed officer of the Marine-Hospital Service, inspect the maritime quarantines of the United States, State and local, as well as national, for the purpose of ascertaining whether the quarantine regulations prescribed by the Secretary of the Treasury have been or are being complied with. The Supervising Surgeon-General, or the officer detailed by him as inspector, shall at his discretion visit any incoming vessel, or any vessel detained in quarantine, and all portions of the quarantine establishment for the above-named purpose and with a view to certifying, if need be, that the regulations have been, or are, being enforced.

## ARTICLE XII.—CANADIAN AND MEXICAN FRONTIERS.

1. When practicable, alien immigrants arriving at Canadian and Mexican ports, destined for the United States, shall be inspected at the port of arrival by the United States consular or medical officer, and be subjected to the same sanitary restrictions as are called for by the rules and regulations governing United States ports.

2. Inspection cards will be issued by the consular or United States medical officer at the port of arrival to all such alien immigrants, and labels affixed to their baggage, as is required in the case of those coming direct from foreign ports to any port of the United States.

3. Whenever alien immigrants are not inspected at the port of arrival by the United States consular or medical officer, they shall enter the United States through certain designated places on the frontier, where they shall be inspected for the purpose of preventing the introduction of quarantinable disease. This inspection shall be held by daylight.

4. If any person be found suffering from a quarantinable disease, or presumably infected, he shall be denied entry so long as danger of conveying the infection exists.

5. Any baggage or other effects believed to be infected shall be refused entry until made safe by a proper disinfection.

6. Persons coming from localities where smallpox is prevailing in epidemic form shall not be allowed entry without vaccination, unless they are protected by a previous attack of the disease or a recent successful vaccination.

7. Persons coming from localities where typhus fever prevails in epidemic form shall not be allowed entry until they have been away from such locality fourteen days and their baggage disinfected.

8. During the quarantine season persons coming from places where yellow fever prevails will not be permitted to enter until they have been away from such locality five days and their baggage has been disinfected. But persons immune to yellow fever will not be detained.

9. No common carrier which is infected, or suspected of being infected, shall be allowed to enter the United States until after such measures have been taken as will render it safe.

10. Articles of merchandise, personal effects, etc., which are capable of conveying infection, and which are presumably infected, shall not be allowed entry into the United States until after disinfection.

11. The methods of disinfection shall be those prescribed in the rules and regulations made for the maritime quarantines of the United States.

Immigrants who, with their baggage, have been inspected at a port of the United States by a quarantine officer upon landing, will be exempt from further quarantine inspection when reentering the United States from Canada, unless there is reason to believe that disease has developed among such immigrants since such landing and inspection.

#### COMMENTS ON THE REVISED REGULATIONS. (FOREIGN.)

In the foreign regulations the bill of health is changed in form and omits the certificate of disinfection as unnecessary, the bill itself covering all points. It is also simplified.

The visa of the bill of health has been changed to a supplemental bill of health and covers sanitary precautions which may have to be taken which were not covered by the former visa of the bill.

Article II relates to inspection, does not go into details of requirements so exactly, removes the provision requiring the inspection to be made within six hours before sailing, and makes other provisions more rational concerning the inspection.

The regulation with regard to rags has been so changed as to allow new cuttings to come in without being classed as rags.

Certain articles of merchandise, such as wool, hair, etc., from districts where cholera prevails, and hides not chemically cured may be shipped without disinfection thirty days after last exposure. Hides chemically cured may be shipped at any time.

Hereafter coverings of merchandise shipped from or through an infected port or place will have to be disinfected only when the consul or medical officer has reason to believe that they have become infected. Under the old regulations they had to be disinfected if coming from an infected port or place.

With regard to steerage passengers, provision is made in the new Regulations (Art. V, par. 6) for allowing the immigrants who come from healthy districts and are simply passing through the infected city to do so, provided they are carried through without any danger of infection and no communication is allowed with the infected locality.

With regard to fresh fruits, under the present Regulations they may be shipped under such sanitary supervision as will enable the inspector to certify that they have not been exposed to infection.

As to dried fruits, dates, figs, etc., which come from remote portions of the world, no restriction is placed upon their shipment other than that provided for in paragraph 4 of Article IV, which would require disinfection or refusal to allow shipment of the same if the consul or medical officer believed that they were infected. Practically the consul or medical officer will not believe they are infected unless he has very good reason for so doing, in which case they should not be shipped; but no special restrictions are placed upon dried fruits.

Under the new Regulations certain food products, such as unsalted meats, sausages, dressed poultry, cheese, bread, etc., coming from cholera-infected localities, may be shipped if the consul or medical officer is satisfied that they were not exposed to infection in a cholera-infected district. Heretofore they were forbidden absolutely.

It will be seen that the vexed question with regard to importation of rags has been definitely settled, the rule with regard to rags being as follows:

All old rags destined for the United States must be disinfected in accordance with prescribed methods and their disinfection certified to by a United States consul at all times, whether epidemic disease is prevailing or not. During the prevalence of cholera in any district, rags gathered in that district shall not be shipped to the United States until thirty days have elapsed after the expiration of the epidemic, and then only after disinfection.

Another important restriction relates to bedding, which, coming from a district known to be infected, or as to the origin of which no positive evidence can be obtained, must be disinfected. Feathers which have been used for bedding must invariably be disinfected by steam, and any bedding presumably infected which can not be disinfected must not be shipped. There is another important restriction relating to the baggage of immigrants. The Regulations require that all baggage shall now be labeled before shipment to the United States. If from a noninfected country and perfectly safe, the label is simply an inspection label on red background; if from a suspected or infected territory, the baggage must be marked "Disinfected," which means that it has been disinfected under consular supervision. By this means the baggage of immigrants, which is considered, next to the immigrants themselves the greatest source of danger in the importation of disease, becomes subject to close surveillance at foreign ports and bears the mark of surveillance on arrival in the United States.

#### COMMENTS ON THE REVISED REGULATIONS. (DOMESTIC.)

There is added a provision forbidding persons, excepting quarantine officers, customs officers, or agents of vessels, boarding a vessel until, after inspection.

Article II, exception 3, of the old Regulations is changed because vessels arriving at ports of call from yellow-fever ports must be placed in quarantine, and all communication with the shore—it is provided in Article III, paragraph 2, of the new Regulations—must be under the supervision of the quarantine officer.

New requirements are made with regard to pilots, their detention in quarantine, and the disinfection of the dunnage when necessary.

Baggage disinfected at a quarantine must be so labeled.

Regarding detention of passengers on account of cholera, the new Regulations require constant surveillance of the detained passengers by a physician, and forbid direct communication between the physician or hospital attendants and those that are held under suspicion in the quarantine; in other words, they require a physician to be specially detailed for the care of the sick, who shall have no communication with the well.

The new Regulations also forbid direct communication between any person detained in quarantine and anyone not in quarantine, except through the quarantine officer, or by his order through his agents.

The period of detention on board of a vessel infected or suspected of being infected with yellow fever is fixed at five days from the completion of the disinfection, instead of three days under the old Regulations, which was permitted provided all packed effects of passengers and crew, and the vessel itself, were handled exclusively by quarantine employees.

The new Regulations require that baggage coming from an infected yellow-fever port to any port of the United States south of the southern boundary of Maryland shall be disinfected at the quarantine at the port of arrival, unless it has been disinfected at the port of departure by a United States medical officer, or unless it is in bond for transit to some point north of the southern boundary of Maryland.

The new Regulations require stopping at quarantine of all cases of leprosy, and, if alien passengers, to be treated in accordance with the immigration act; if alien members of a crew, to be taken again by the vessel on her outward voyage.

This regulation in the main was formerly in existence under a Department Circular, No. 130, dated December 23, 1889.

Special provision is made for the conduct of the fruit trade in Southern ports to permit the same under sanitary regulations.

A prescribed form of pratique is added to the new Regulations.

The regulations for the Canadian and Mexican frontiers are mainly new matter.

## AMENDMENTS TO QUARANTINE REGULATIONS.

[Circular.]

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,  
Washington, D. C., August 16, 1894.

*To Officers of the Treasury Department, Consular Officers, and others concerned :*

Referring to Department circular, dated April 26, 1894, United States Quarantine Laws and Regulations, the following amendment is hereby made to the "Quarantine Regulations to be observed at ports and on the frontiers of the United States," viz :

Article VIII, paragraph 11, amended to read : "The personnel of the vessel shall be detained five days from the completion of the disinfection, or three days if all baggage, effects of passengers and crew, and the vessel, are handled exclusively by quarantine employees."

J. G. CARLISLE, *Secretary.*

REGULATIONS REGARDING CONSULAR BILLS OF HEALTH FROM CERTAIN PORTS IN  
CANADA AND MEXICO.

[Circular.]

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,  
Washington, D. C., October 17, 1894.

*To Officers of the Treasury Department, Consular Officers, and others concerned :*

The following act passed both Houses of Congress during the last session and was approved by the President August 18, 1894 :

AN ACT to amend section 2 of the act approved February 15, 1893, entitled "An act granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service."

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That section two of the act approved February fifteenth, eighteen hundred and ninety-three, entitled "An act granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service," is hereby amended by adding to the end of said section the following :

"The provisions of this section shall not apply to vessels plying between foreign ports on or near the frontiers of the United States and ports of the United States adjacent thereto; but the Secretary of the Treasury is hereby authorized, when, in his discretion, it is expedient for the preservation of the public health, to establish regulations governing such vessels."

Under the above act, vessels plying between Canadian ports on the St. Croix River, the St. Lawrence River, the Niagara River, the Detroit River, Lake St. Clair and St. Clair River, and the St. Marys River, and adjacent ports in the United States on the same waters; also Mexican ports on the Rio Grande River and adjacent ports in the United States, are exempt from the provisions of section 2 of the act granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service, approved February 15, 1893, which requires vessels clearing from a foreign port for a port in the United States to obtain from the consular officer a bill of health.

During the prevalence of any of the quarantinable diseases at the foreign port of departure, vessels above referred to are hereby required to obtain from the consular officer of the United States, or from the medical officer of the United States, when such officer has been detailed by the President for this purpose, a bill of health, in duplicate, in the form prescribed by the Secretary of the Treasury, Quarantine Regulations of the United States, 1894.

J. G. CARLISLE, *Secretary.*

## INTERSTATE QUARANTINE REGULATIONS.

The same board which revised the Maritime Quarantine Regulations were also instructed to prepare Interstate Quarantine Regulations, which after revision were duly promulgated as follows:

### INTERSTATE QUARANTINE REGULATIONS.

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,  
*Washington, D. C., September 27, 1894.*

*To medical officers of the Marine-Hospital Service,  
State and local health authorities, and others concerned:*

In accordance with section 3 of the act of February 15, 1893, the following regulations are hereby promulgated to prevent the introduction of contagious diseases into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia. Additional regulations will be promulgated from time to time, as circumstances demand.

The regulations of the Department issued August 12, 1893, to prevent the spread of yellow fever are hereby rescinded.

J. G. CARLISLE, *Secretary.*

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### INTERSTATE QUARANTINE REGULATIONS.

#### ARTICLE I.

##### QUARANTINABLE DISEASES.

(1) For the purposes of these regulations the quarantinable diseases are cholera (cholerae), yellow fever, smallpox, typhus fever, leprosy, and plague.

#### ARTICLE II.

##### NOTIFICATION.

(1) State and municipal health officers should immediately notify the Supervising Surgeon-General of the United States Marine-Hospital Service by telegraph or by letter of the existence of any of the above-mentioned quarantinable diseases in their respective States or localities.

#### ARTICLE III.

##### GENERAL REGULATIONS.

(1) Persons suffering from a quarantinable disease shall be isolated until no longer capable of transmitting the disease to others. Persons exposed to the infection of a quarantinable disease shall be isolated, under observation, for such a period of time as may be necessary to demonstrate their freedom from the disease.

All articles pertaining to such persons, liable to convey infection, shall be disinfected as hereinafter provided.

(2) The apartments occupied by persons suffering from quarantinable disease, and adjoining apartments when deemed infected, together with articles therein, shall be disinfected upon the termination of the disease.

(3) Communication shall not be held with the above-named persons and apartments, except under the direction of a duly qualified officer.

(4) All cases of quarantinable disease, and all cases suspected of belonging to this class, shall be at once reported by the physician in attendance to the proper authorities.

(5) No common carrier shall accept for transportation any person suffering with a quarantinable disease, nor any infected article of clothing, bedding, or personal property.

The body of any person who has died of a quarantinable disease shall not be transported save in hermetically sealed coffins, and by the order of the State or local health officer.

(6) In the event of the prevalence of smallpox, all persons exposed to the infection, who are not protected by vaccination or a previous attack of the disease, shall be at once vaccinated or isolated for a period of fourteen days.

(7) During the prevalence of cholera all the dejecta of cholera patients shall be at once disinfected as hereinafter provided to prevent possible contamination of the food and water supply.

#### ARTICLE IV.

##### YELLOW FEVER.

In addition to the foregoing regulations contained in Article III, the following special provisions are made with regard to the prevention of the introduction and spread of yellow fever:

(1) Localities infected with yellow fever and localities contiguous thereto should be depopulated as rapidly and as completely as possible, so far as the same can be safely done, persons from noninfected localities and who have not been exposed to infection being allowed to leave without detention. Those who have been exposed, or who come from infected localities, shall be required to undergo a period of detention and observation of ten days from the date of last exposure in a camp of probation or other designated place. Clothing and other articles capable of conveying infection shall not be transported to noninfected localities without disinfection.

(2) Persons who have been exposed may be permitted to proceed without detention to localities incapable of becoming infected and whose authorities are willing to receive them and after arrangements have been perfected, to the satisfaction of the proper health officer, for their detention in said localities for a period of ten days.

(3) The suspects who are isolated under the provisions of paragraph 1, Article III, shall be kept free from all possibility of infection.

(4) So far as possible, the sick should be removed to a central location for treatment.

(5) Buildings in which yellow fever has occurred, and localities believed to be infected with said disease, must be disinfected as thoroughly as possible.

(6) As soon as the disease becomes epidemic the railroad trains carrying persons allowed to depart from a city or place infected with yellow fever shall be under medical supervision.

(7) Common carriers from the infected districts, or believed to be carrying persons and effects capable of conveying infection, shall be subject to a sanitary inspection, and such persons and effects shall not be allowed to proceed, except as provided for by paragraph 2.

(8) At the close of an epidemic the houses where sickness has occurred, and the contents of the same, and houses and contents that are presumably infected, shall be disinfected as hereinafter prescribed.

## ARTICLE V.

## DISINFECTION.

## FOR CHOLERA.

(1) The dejecta and vomited matters of cholera patients shall be received into vessels containing an acid solution of bichloride of mercury (bichloride of mercury, 1 part; hydrochloric acid, 2 parts; water, 1,000 parts) or other efficient germicidal agent.

(2) All bedding, clothing, and wearing apparel soiled by the discharges of cholera patients shall be disinfected by one or more of the following methods:

(a) By complete immersion for thirty minutes in one of the above-named disinfecting solutions.

(b) By boiling for fifteen minutes, all articles to be completely submerged.

(c) By exposure to steam at a temperature of 100° to 200° C. for thirty minutes after such temperature is reached.

(3) Any woodwork or furniture contaminated by cholera discharges shall be disinfected by thorough washing with a germicidal solution as provided in paragraph 1, Article III.

## FOR YELLOW FEVER.

(4) Apartments infected by occupancy of patients sick with yellow fever shall be disinfected by one or more of the following methods:

(a) By thorough washing with one of the above-named germicidal solutions. If apprehension is felt as to the poisonous effects of the mercury, the surfaces may, after two hours, be washed with clear water.

(b) Thorough washing with a 5 per cent solution of pure carbolic acid.

(c) By sulphur dioxide, twenty-four to forty-eight hours' exposure, the apartments to be rendered as air-tight as possible.

(5) Bedding, wearing apparel, carpets, hangings, and draperies infected by yellow fever shall be disinfected by one of the following methods:

(a) By exposure to steam at a temperature of 100° to 102° C. for thirty minutes after such temperature is reached.

(b) By boiling for fifteen minutes, all articles to be completely submerged.

(c) By thorough saturation in a solution of bichloride of mercury 1-1000, the articles being allowed to dry before washing.

Articles injured by steam (rubber, leather, containers, etc.), to the disinfection of which steam is inapplicable, shall be disinfected by thoroughly wetting all surfaces with (a) a solution of bichloride of mercury 1-800, or (b) a 5 per cent solution of carbolic acid, the articles being allowed to dry in the open air prior to being washed with water, or (c) by exposure to sulphur fumigation in an apartment air-tight, or as nearly so as possible.

## FOR SMALLPOX.

(6) Apartments infected by smallpox shall be disinfected by one or both of the following methods:

(a) Exposure to sulphur dioxide for twenty-four to forty-eight hours.

(b) Washing with a solution of bichloride of mercury 1-1000, or a 5 per cent solution of pure carbolic acid.

(7) Clothing, bedding, and articles of furniture exposed to the infection of smallpox shall be disinfected by one or more of the following methods:

(a) Exposure to sulphur dioxide for twenty-four to forty-eight hours.

(b) Immersion in a solution of bichloride of mercury 1-1000, or 5 per cent solution of pure carbolic acid.

(c) Exposure to steam at a temperature of 100° to 102° C. for thirty minutes after such temperature is reached.

(d) Boiling for fifteen minutes, the articles to be completely submerged.



## FOR TYPHUS FEVER.

(8) Apartments infected by typhus fever shall be disinfected by one or both of the following methods:

- (a) Exposure to sulphur dioxide for twenty-four to forty-eight hours.
- (b) Washing with a solution of bichloride of mercury 1-1000, or a 5 per cent solution of pure carbolic acid.
- (9) Clothing, bedding, and articles of furniture exposed to the infection of typhus fever shall be disinfected by one or more of the following methods:
  - (a) Exposure to sulphur dioxide for twenty-four to forty-eight hours.
  - (b) Immersion in a solution of bichloride of mercury 1-1000, or a 5 per cent solution of pure carbolic acid.
  - (c) Exposure to steam at a temperature of 100° to 102° C. for thirty minutes after such temperature is reached.
  - (d) Boiling for fifteen minutes, the articles to be completely submerged.

## LEGAL OPINIONS RELATING TO THE LAW OF FEBRUARY 15, 1893.

The following opinion was given by the Solicitor of the Treasury upon the right of the Government to inspect State and municipal quarantines:

DEPARTMENT OF JUSTICE,  
OFFICE OF THE SOLICITOR OF THE TREASURY,  
*Washington, D. C., April 24, 1893.*

SIR: I have by reference a letter of Dr. Wyman, Supervising Surgeon-General Marine-Hospital Service, under date of April 19, inquiring with regard to the right of the Government, under the quarantine act approved February 15, 1893, "to inspect, at such times as may be necessary, a State or municipal quarantine of the United States."

The act referred to does not expressly provide that State or local quarantines of the United States may be inspected by the Marine-Hospital Service, but it seems to me a fair and reasonable intendment of the law that such power does exist, otherwise the act would be, to an important extent, ineffectual and inoperative. And I fully concur with Dr. Wyman, in the opinion that Congress intended the President should have available sources of information so that he might know with certainty whether the rules and regulations prescribed are being properly enforced.

Section 1 of said act provides "that it shall be unlawful for any merchant ship or other vessel from any foreign port or place to enter any port of the United States except in accordance with the provisions of this act and with such rules and regulations of State and municipal health authorities as may be made in pursuance of, or consistent with, this act." \* \* \*

Section 3 prescribes "that the Supervising Surgeon-General of the Marine-Hospital Service shall, immediately after this act takes effect, examine the quarantine regulations of all State and municipal boards of health, and shall, under the direction of the Secretary of the Treasury, cooperate with and aid State and municipal boards of health in the execution and enforcement of the rules and regulations made by the Secretary of the Treasury to prevent the introduction of contagious or infectious diseases into the United States from foreign countries, and into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia." \* \* \* And further that \* \* \* "at such ports and places within the United States where quarantine regulations exist under the authority of the State or municipality which, in the opinion of the Secretary of the Treasury, are

not sufficient to prevent the introduction of such diseases into the United States, or into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia, the Secretary of the Treasury shall, if in his judgment it is necessary and proper, make such additional rules and regulations as are necessary to prevent the introduction of such diseases into the United States from foreign countries, or into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia, and when said rules and regulations have been made they shall be promulgated by the Secretary of the Treasury and enforced by the sanitary authorities of the States and municipalities, where the State or municipal health authorities will undertake to execute and enforce them; but if the State or municipal authorities shall fail or refuse to enforce said rules and regulations the President shall execute and enforce the same and adopt such measures as in his judgment shall be necessary to prevent the introduction or spread of such diseases, and may detail or appoint officers for that purpose."

Section 4 provides "that it shall be the duty of the Supervising Surgeon-General of the Marine-Hospital Service, under the direction of the Secretary of the Treasury, to perform all the duties in respect to quarantine and quarantine regulations which are provided for by this act."

Section 6, relating to the treatment of an infected vessel at a national quarantine station, further provides: "But at any ports where sufficient quarantine provision has been made by State or local authorities the Secretary of the Treasury may direct vessels bound for said ports to undergo quarantine at said State or local station."

It thus appears all through the act that the national quarantine system provided for by Congress has, necessarily, inspective and supervisory powers over the sanitary authorities of the State or municipality.

Besides, it is a well-established and familiar principle of law, that whenever a power is given by a statute, everything necessary to make it effectual or requisite to attain the end is implied, and when a statute gives a right to impose a duty it also confers by implication the power necessary to make the right available or to discharge the duty. (Suth. on Stat. Cons., secs. 341, 343, 344, 345, 390.) And statutes relating to the public health are to be liberally construed. (Dwar. on Stat.)

I am therefore clearly of the opinion that it would be within the scope and intention of the act for the Government to authorize the inspection, by proper officers connected with the Marine-Hospital Service, of the condition of the State or local quarantines.

\* \* \* \* \*

Very respectfully,

The SECRETARY OF THE TREASURY.

F. A. REEVE, *Solicitor*.

The following is a decision of the Solicitor of the Treasury as to what is understood by the words "entering any port in the United States," as used in the national quarantine act of February 15, 1893:

DEPARTMENT OF JUSTICE,  
OFFICE OF THE SOLICITOR OF THE TREASURY,  
*Washington, D. C., September 19, 1893.*

SIR: The Supervising Surgeon-General Marine-Hospital Service, Dr. Walter Wyman, has addressed a letter to me (inclosing one from Surg. R. D. Murray, on duty at Key West quarantine station), in which he states that a vessel from a foreign port had arrived there without bringing a consular bill of health, as provided for in the national quarantine act of February 15, 1893, and the matter was referred to the collector of customs at Key West, with the request that he enter action against said vessel under the provisions of section 2 of the act. \* \* \*

The question proposed to me is whether the words "entering any port of the United States," as used in said quarantine act, must be held to mean the entry of the vessel at the custom-house.

I do not understand such to be the meaning of the statute. By section 1 it is provided:

"That it shall be unlawful for any merchant ship or other vessel from any foreign port or place to enter any port of the United States, except in accordance with the provisions of this act and with such rules and regulations of State or municipal health authorities as may be made in pursuance of or consistent with this act; and any such vessel which shall enter or attempt to enter any port of the United States in violation thereof shall forfeit to the United States a sum to be awarded in the discretion of the court, not exceeding five thousand dollars." etc.

Section 2 of the act provides, among other things, that—

"Any vessel clearing and sailing from any such port without such bill of health, and entering any port of the United States, shall forfeit to the United States not more than five thousand dollars." etc.

A "port" differs from a "haven," and includes something more. First, it is a place at which vessels may arrive, discharge, or take in their cargoes. Second, it comprehends a ville, city, or borough, called in Latin, *capit corpus*, for the reception of mariners and merchants, for securing the goods and bringing them to market, etc. Third, it is impressed with a legal character by the civil authority.

By the Roman law a port is defined to be *locus conclusus, quo importantur merces et unde exportantur*. In other words, a port is a natural or artificial harbor or bay, cove, inlet, or recess of the sea, or a lake or mouth of a river which vessels can enter, and where they can lie safe from injury by storms. In a legal sense, a port is a place where persons or merchandise are allowed to pass into and out of a country—a place where there is a constant resort of vessels for the purpose of loading and unloading, with provisions made for them to do so. A port may exist without a custom-house at all. The port, for instance, of Boston would still be a port or harbor in a physical or geographical sense if the custom-house were removed from there.

I do not think, therefore, that the words "entering any port of the United States," as used in the quarantine act, mean the entry of a vessel at the custom-house.

Very respectfully,

F. A. REEVE, *Solicitor*.

Hon. JOHN G. CARLISLE,

*Secretary of the Treasury.*

The following opinion of the judge of the United States district court for the southern district of Florida is of importance, as it prevents prosecution under the law of February 15, 1893, of small trading vessels without bills of health entering out-of-the-way ports in the State of Florida with the evident intent of smuggling, frequently bringing with them as a crew men who have recently arrived in Havana from Spain and may have contracted yellow fever, thus endangering the coast. Cases of yellow fever have been known to have been landed from these vessels. To meet this situation it is necessary that the quarantine law be amended so that section 1 shall forbid entry to any port or harbor or within the waters of any collection district of the United States, except in accordance with the terms of the law:

## UNITED STATES DISTRICT COURT, SOUTHERN DISTRICT OF FLORIDA.

THE UNITED STATES	}	In admiralty.
v.		
THE SCHOONER JAVARINA.		

*Copy of the opinion filed by the Hon. James W. Locke, judge of the above-entitled court.*

On the 8th day of July, 1894, the revenue cutter *McLane*, coming up the west coast of Florida, saw anchored somewhat to the north and west of North Anclote Key several vessels, of which the herein-labeled vessel was one. Upon the approach of the cutter two of them made sail, attempting to pass out to sea, and upon the cutter's giving chase and following them, all of the several vessels made sail and attempted to escape. Upon the cutter's intercepting these vessels that were putting to sea, they were all brought to anchor and boarded by the boarding officer. It was ascertained that they were Spanish smacks, from Havana, and it is reported by the officer that they acknowledged, all of them, to have been at anchor twenty-four hours. The location was in a buoyed channel inside of several buoys marking the entrance to the well-known anchorage within Anclote Key, at a distance of about 2½ miles from shore off North Anclote Key, and perhaps 5 or 6 miles from shores of mainland. The master of the revenue cutter, considering that they had arrived within the limits of a collection district of the United States, and, according to their own admissions, had not reported, considered it his duty to take them under arrest and bring them to the most convenient port of entrance, which was the port of Tampa, which he did. It is shown they had on board at the time certain ship's stores and certain amounts of aguardiente and wine, the amount being in each case, I think, about 30 gallons of each, varying slightly in some cases, more or less wine or aguardiente.

Libels of information were filed in behalf of the Government alleging that these vessels had violated sections 2773, 2774, and 2775 of the Revised Statutes of the United States, as well as the more recent act of Congress providing for protecting the country from epidemic, approved February 15, 1893.

Section 2773 of the Revised Statutes of the United States provides that "if any vessel having arrived within the limits of any collection district from a foreign port, departs or attempts to depart from same, unless to proceed on her way to some more interior district to which she may be bound, before report or entry shall have been made by the master with collector of some district, the master shall be liable to a penalty of \$400," and the vessel may be arrested and brought back to the most convenient port of the United States. The first question that may be considered in that connection is what may be considered limits of collection district. The law provides that the collection district in which this seizure is shown to have been made comprises the shores and the waters of the United States and State of Florida for a certain distance. How far can it be considered that the waters of the open sea are included within the term "district"? In designating waters of the United States and of the open sea we have few lines of demarcation, high tide and low tide, and maritime limit of exclusive national jurisdiction of 3 miles, and the extended limit for revenue purposes of 4 leagues; these have all been recognized by civilized nations as limits within which nations could exercise certain rights, each having its peculiar characteristics. When these limits are departed from it is not within the power of a court to determine any other lines within which jurisdiction or rights may be determined. It is contended that these vessels were not within a collection district of the United States, but it can not be considered that a collection district is limited by the lines of either high or low tide, or to the shore and coast. A collection district, I consider, can be bounded by no other than the generally accepted rule of a line drawn 3 miles from shore or coast within that district and that if the vessels seized were within 3 miles of the land, coast, or shore they were within a collection dis-

strict. There appears nothing in this case to show the arrival of these vessels had not been intentional and deliberate; nothing to show that it was through compulsion or stress of weather. It appears from the testimony, as near as the court can judge, that this place was a general rendezvous, or a resort, or a place of anchorage for a large number of this class of vessels.

It appears that two days before one seizure was made thirteen of this class of vessels arrived and were lying there at anchor; at that time there was no peculiar stress of weather; the custom-house inspector in a small boat sailed out among and between them.

There is no contention that there had been any report or entry, and I find that the letter of the law unquestionably has been violated in this matter.

The next question is of greater importance: Was the intention of the law such as to reach such cases as this? Where the letter of the law appears to have been violated, with an ordinary consideration of the terms, the burden of proof is upon the party defendant to show that the intention of the lawmaker was that the law should not have the force which the ordinary construction of the language would give it. It has been urged that if the law were intended to apply to such cases as this it might oftentimes work a severe hardship upon vessels coming to anchor within 3 miles of a coast from necessity, and that it could not have been intended that such cases could be held to be a violation of law. Taking into consideration the numerous laws of all nations at the time of the enactment of this statute of 1799, which has been embodied in these sections of the Revised Statutes, it can but be considered that it was the intention of Congress at that time to prevent any hovering of commercial or trading vessels along the coast. At that time it was unquestionably deemed necessary that some laws prohibiting vessels arriving and departing at will without restriction, without any report of their character, should be in force, and that is all that is required in section 2773. In that case it is also provided that where a vessel's departure from necessity is through any stress of weather the penalty will not attach. The case of the *Appolon* (9 Wheat., 302) has been cited by the defense to show that this law was not intended to apply to vessels excepting those which were destined and intended for and to ports of the United States. It is true that language of that character is used in the opinion in that case, but it will be found that it did not apply to this section (then section 19 of act of 1799), but applied to another section of the same act, where a right of visitation within 4 leagues of a coast was allowed. Upon careful consideration of all authorities which I have been able to find, I am fully satisfied that not only the language of section 2773 was violated, but that the intention of Congress was that it might be applied to just such cases as this. Unless this section applies to such cases as this, the United States has no law to prevent any foreign-bound vessels from hovering along our coasts, even within a few hundred yards, without entering, reporting, or making their character or presence known. I therefore find that section 2773 was violated, and no excuse has been made that would justify nonprosecution of it.\* When we consider the next two sections, 2774 provides that the vessel must have arrived at a port of the United States established by law. The section of the act of 1799, from which that was taken, includes both sections 2774 and 2775, and the language of section 2775 must necessarily refer to such a port as is established in 2774, and that is a port of the United States established by law. The Anclote Harbor was not a port of the United States established by law, neither a port of entrance nor discharge. I therefore find that there was no violation of sections 2774 and 2775. I find no attempt to enter a port which would bring the case within the act of 1893, known as the quarantine regulation. Beyond questions of violation of law in this case, a question of practice has arisen which requires consideration. It is contended

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\* Reversed by United States circuit court of appeals. Opinion of court will be included in the Annual Report for 1895.

that the fine was first against the master and not against the vessel. At the time of the decision in the case of *Appolon*, supra, there was no law providing for the enforcement of a penalty against the master by a proceeding against the vessel, but by the act of 1866, section 3088 of the Revised Statutes, wherever the master has become subject to a penalty the vessel may be held liable and proceeded against by libel. Is it necessary in order to constitute valid right of action against the vessel that there should be a technical imposition of fine and refusal to pay? I find nothing in the statutes or any decision upon the question. The act of 1866, section 3088, Revised Statutes, does not provide that where a penalty has been imposed, and the master refuses to pay, the right of action exists against the vessel, but that where a penalty has been "incurred" the right exists. There is no question in my mind but what a libel could be filed against a vessel without the imposition of a fine or notice to the master that a fine had been imposed upon him.

#### ENFORCEMENT OF THE LAW REQUIRING BILLS OF HEALTH.

Among the efforts made by shipmasters to avoid obtaining the prescribed bill of health may be mentioned the case of the steamship *Dago*, which arrived at Baltimore, August 2, 1893.

The following correspondence is self-explanatory:

OFFICE OF THE COLLECTOR OF CUSTOMS,  
*Baltimore, October 30, 1893.*

SIR: I have the honor to advise your Department that on August 2, 1893, the steamship *Dago* arrived at this port in water ballast, no passengers, 23 in crew, from Bristol, England, via Newport, Wales. The master presented a consular bill of health from the port of call (Newport), but failed to have one from Bristol. As this was in violation of the act approved February 15, 1893, section 2, I declined to enter the vessel before asking the instruction of your Department, which I did by telegraphic communication on the date above mentioned. On the same day I received the following reply, dated at Washington, D. C., and numbered 1256 P:

"*Dago* should be admitted and action taken under laws, as regulations have been duly promulgated at Bristol. Application for remission can be made after action."

In obedience to the foregoing instruction I admitted the vessel to entry and reported the case to the United States district attorney, who instituted proceedings against the *Dago* in the United States district court for the district of Maryland. The case came up for trial on the 21st instant, before Judge Thomas H. Morris, who, after hearing the facts and the arguments submitted by counsel, dismissed the case.

The contention of the district attorney was that the master of the steamship *Dago* should have obtained a bill of health at Bristol and have the same viséed at Newport, in compliance with the provisions of Amendments to Quarantine Regulations, approved February 24, 1893 (Department Circular No. 81, Marine-Hospital Service).

In an oral opinion Judge Morris held, as I understand, that the *Dago*, not having had a cargo on board when she left Bristol, satisfied the provisions of the law by obtaining a consular bill of health at Newport, which was the real point of departure, to all intents and purposes, as far as the facts in the case then before him demonstrated.

Deeming it my duty to inform you of the particulars in this case, I therefore submit this report for such consideration as, in your judgment, it will seem entitled to receive.

Respectfully, yours,

W. M. MARINE, *Collector*

Hon. JOHN G. CARLISLE,  
*Secretary of the Treasury, Washington, D. C.*

The case having been appealed, the decree of the district court for the district of Maryland was reversed, as will be seen by the following report:

UNITED STATES CIRCUIT COURT OF APPEALS, FOURTH CIRCUIT.

THE UNITED STATES, APPELLANT,	} No. 67.
v.	
THE BRITISH STEAMSHIP DAGO, APPELLEE.	

[Argued February 15, 1894. Decided May 22, 1894.]

Appeal from the district court of the United States for the district of Maryland. Before Goff and Simonton, circuit judges, and Jackson, district judge.

Argued by John T. Ensor, attorney for appellant, and J. Wilson Leakin, attorney for appellee.

Goff, circuit judge.

This is an appeal from a decree rendered by the district court of the United States for the district of Maryland, dismissing a libel filed on behalf of the United States against the steamship *Dago*. It was charged in the libel that the steamship had not complied with the provisions of the act of Congress approved February 15, 1893, entitled "An act granting additional quarantine powers and imposing additional duties on the Marine-Hospital Service" (27 Stat. L., 448). It was alleged that the *Dago* cleared from a certain foreign port, the port of Bristol, England, for the port of Baltimore, in the United States, on the 10th day of July, 1893, without having obtained a bill of health, as was required by section 2 of said act of Congress, and also that, having cleared and sailed from said port of Bristol at the time mentioned, she did, on the 2d day of August, 1893, unlawfully enter the port of Baltimore, in the United States, without having obtained a bill of health, as was required by the said act of Congress.

The libel, which was filed August 5, 1893, sets forth that the *Dago* was seized by the collector of customs at the port of Baltimore as forfeited to the United States, to be released upon the payment of not more than \$5,000, the exact amount to be determined by the court. The answer of the steamship, filed September 22, 1893, claimed that she came to the port of Baltimore provided with a bill of health in all respects in accord with the requirements of the law, obtained at Newport, in Wales, her last port of departure from Great Britain, and she insisted that no other bill of health was required of her by the law.

The said act of Congress, or the parts thereof necessary to consider in connection with this case, reads as follows: "That it shall be unlawful for any merchant ship or other vessel from any foreign port or place to enter any port of the United States except in accordance with the provisions of this act, and with such rules and regulations of State and municipal health authorities as may be made in pursuance of, or consistent with, this act; and any such vessel which shall enter, or attempt to enter, a port of the United States in violation thereof, shall forfeit to the United States a sum, to be awarded in the discretion of the court, not exceeding five thousand dollars, which shall be a lien upon said vessel, to be recovered by proceedings in the proper district court of the United States. In all such proceedings the United States district attorney for such district shall appear on behalf of the United States, and all such proceedings shall be conducted in accordance with the rules and laws governing cases of seizure of vessels for violation of the revenue laws of the United States.

"SEC. 2. That any vessel at any foreign port, clearing for any port or place in the United States, shall be required to obtain from the consul, vice-consul, or other consular officer of the United States at the port of departure, or from the medical officer where such officer has been detailed by the President for that purpose, a bill of health, in duplicate, in the form prescribed by the Secretary of the Treasury, setting forth the sanitary history and condition of said vessel, and that it has in all respects

complied with the rules and regulations in such cases prescribed for securing the best sanitary condition of the said vessel, its cargo, passengers, and crew; and said consular or medical officer is required, before granting such duplicate bill of health, to be satisfied that the matters and things therein stated are true; and for his services in that behalf he shall be entitled to demand and receive such fees as shall by lawful regulation be allowed, to be accounted for as is required in other cases.

"The President, in his discretion, is authorized to detail any medical officer of the Government to serve in the office of the consul, at any foreign port, for the purpose of furnishing information and making the inspection and giving the bills of health hereinbefore mentioned. Any vessel clearing and sailing from any such port without such bill of health, and entering any port of the United States, shall forfeit to the United States not more than five thousand dollars, the amount to be determined by the court, which shall be a lien on the same, to be recovered by proceedings in the proper district court of the United States.

"SEC. 3. That the Supervising Surgeon-General of the Marine-Hospital Service shall, immediately after this act takes effect, examine the quarantine regulations of all State and municipal boards of health, and shall, under the direction of the Secretary of the Treasury, cooperate with and aid State and municipal boards of health in the execution and enforcement of the rules and regulations of such boards and in the execution and enforcement of the rules and regulations made by the Secretary of the Treasury to prevent the introduction of contagious or infectious diseases into the United States from foreign countries, and into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia. \* \* \* The Secretary of the Treasury shall make such rules and regulations as are necessary to be observed by vessels at the port of departure and on the voyage, where such vessels sail from any foreign port or place to any port or place in the United States, to secure the best sanitary condition of such vessel, her cargo, passengers, and crew; which shall be published and communicated to and enforced by the consular officers of the United States. None of the penalties herein imposed shall attach to any vessel or owner or officer thereof until a copy of this act, with the rules and regulations made in pursuance thereof, has been posted up in the office of the consul or other consular officer of the United States for ten days in the port from which said vessel sailed; and the certificate of such consul or consular officer over his official signature shall be competent evidence of such posting in any court of the United States."

The only question in the case is, we think, whether or not the steamship *Dago* was required to obtain a bill of health at Bristol, England, at the time she cleared and departed therefrom for Baltimore, in the United States, by way of Newport, Wales. It was contended by the respondent below, that as she stopped on her way at Newport it was only necessary to obtain a bill of health at that place. It was clearly shown by the testimony, in fact it was admitted, that the *Dago* cleared from Bristol, England, via Newport, Wales, for Baltimore, in the United States, and that she was provided with a bill of health from the port of Newport, Wales, but that she did not obtain a bill of health at the port of Bristol at the time of departing therefrom, and also that she was not provided with one at the time she entered the port of Baltimore.

The district court, holding that the *Dago* was not guilty of a breach of said act of Congress, dismissed the libel. The United States petitioned for and was allowed an appeal.

The act mentioned was passed to prevent, if possible, the introduction into the United States of contagious and infectious diseases from any foreign port. It makes it unlawful for any vessel from any foreign port to enter any port of the United States except in the manner provided for by said legislation and the rules and regulations established under its provisions; and it requires any vessel at any foreign port clearing for any port in the United States to obtain a bill of health at the port from which it so clears and departs.



The regulations promulgated by the Secretary of the Treasury, dated February 24, 1893, in pursuance of said act of Congress, are in part as follows:

Article 1. Masters of vessels about to depart from any foreign port for a port in the United States must procure from the United States consular or medical officer at such port of departure a bill of health.

The act of Congress and the rules and regulations authorized by it were duly posted in the office of the consul at Bristol, England, in the manner required by law. The master of the *Dago* was aware that a bill of health was required and procured it at Newport, in Wales.

To hold that this action on his part was a compliance with the terms of the law and regulations in such cases made and provided would permit a vessel to clear from an infected foreign port, at which it could not properly obtain such bill of health, and by stopping on the way at another port not infected secure the bill of health that would enable it to enter the ports of the United States, thereby defeating the object had in view when said act of Congress was enacted. It is intended by said legislation to furnish the health and quarantine authorities of this country with information relative to the sanitary condition of the ports of departure of vessels desiring to enter the ports of the United States. It is made the duty of the Secretary of the Treasury and of the Supervising Surgeon-General of the Marine-Hospital Service to cooperate with and aid State and municipal boards of health in the execution and enforcement of the rules and regulations made by the Secretary of the Treasury to prevent the introduction of contagious or infectious diseases into the United States from foreign countries. And the Secretary of the Treasury is required to make such rules and regulations as are necessary to be observed by vessels at the port of departure and on the voyage, where such vessels sail from any foreign port or place to any port or place in the United States, to secure the best sanitary condition of such vessel, her cargo, passengers, and crew, which shall be published and communicated to and enforced by the consular officers of the United States. By the regulations so authorized and promulgated the United States consul at the port of departure is required to certify that the vessel has complied with the rules made under the act now in question and that the vessel leaves his port bound for a particular port in the United States. If the vessel so bound for the United States stops at other foreign ports the consul of the United States at which such calls are made must give a similar certificate or consular visé of the bill of health as to the passengers, their effects, and the cargo taken on the vessel at such ports, and also as to the condition of the vessel, passengers, and crew since it left the port of departure.

The protection intended by the legislation is of great and universal importance, and the provisions of the rules and regulations are not severe, nor are they burdensome, but are made with due regard to the interests of all concerned, and are necessary both to the comfort of the individual citizen and the safety of the general public.

We do not think the *Dago* complied with the requirements of said act of Congress when she procured the bill of health at Newport, Wales. She should have secured it at Bristol, England, her port of departure. She violated the law and ignored the rules and regulations provided for by it. It follows that the decree of the district court for the district of Maryland must be reversed and the cause remanded to said court for such further proceedings as may be proper, and it is so ordered.

DEPARTMENT OF JUSTICE,  
*Washington, D. C., June 6, 1894.*

SIR: I have the honor to advise you that the circuit court of appeals for the fourth circuit has handed down an opinion in the case of the *United States v. The British steamship Dago*, in which it holds that the *Dago* violated the act of Congress approved February 15, 1893, entitled "An act granting additional quarantine powers and imposing additional duties on the Marine-Hospital Service.

Respectfully,  
The SECRETARY OF THE TREASURY.

RICHARD OLNEY, *Attorney-General.*

## ENFORCEMENT OF THE QUARANTINE REGULATIONS FOR DOMESTIC PORTS.

For the purpose of enforcing the quarantine regulations at domestic ports, Marine-Hospital officers were detailed to inspect the same, the character of the inspection being shown by the following instructions:

### INSTRUCTIONS TO MEDICAL OFFICERS OF THE MARINE-HOSPITAL SERVICE DETAILED TO MAKE INSPECTIONS OF STATE AND LOCAL QUARANTINES.

#### TREASURY REGULATION.

\* \* \* \* \*

In the performance of the duties imposed upon him by the act of February 15, 1893, the Supervising Surgeon-General of the Marine-Hospital Service shall, from time to time, personally or through a duly detailed officer of the Marine-Hospital Service, inspect the maritime quarantines of the United States, State and local, as well as national, for the purpose of ascertaining whether the quarantine regulations prescribed by the Secretary of the Treasury have been or are being complied with. The Supervising Surgeon-General, or the officer detailed by him as inspector, shall, at his discretion, visit any incoming vessel, or any vessel detained in quarantine, and all portions of the quarantine establishment for the above-named purpose and with a view to certifying, if need be, that the regulations have been or are being enforced.

J. G. CARLISLE, *Secretary*.

#### GENERAL INSTRUCTIONS.

A. Your inspections will include all ports within your district where vessels are allowed to enter and discharge cargo, and ports which may be used as ports of call.

B. A separate report will be made of each station visited.

C. Visit every part of the quarantine establishment, and take necessary precautions to prevent the conveyance of contagious or infectious diseases through the medium of your own person.

D. Visit the custom-house for the purpose of ascertaining whether the regulations with regard to bills of health and quarantine certificates are being observed; also the immigration station for any pertinent information.

E. Reports of a statistical character and descriptive of the quarantine called for herein need be made but once in every six months, namely, on the date nearest the 1st of January and the date nearest the 1st of July; but any changes that have been made since the last general report should be immediately recorded.

In making your report you will follow the special instructions in their order, referring to each by number.

#### SPECIAL INSTRUCTIONS.

1. Describe the quarantine station, location, buildings, anchorages, etc. Give limits of anchorage for noninfected and for infected vessels; facilities for inspection of vessels; apparatus for disinfection of vessels and of baggage; facilities for removal and treatment of the sick, and for the removal and detention of suspects; mail and telegraph facilities, etc.

2. Give personnel of the station or port; name of the quarantine officer or officers; post-office address; total number of officers and subordinates, etc.

3. Transmit copies of the laws under which the local quarantine is maintained and copies of the quarantine regulations, and describe the quarantine customs of the port as they are carried out.

NOTE.—There are sometimes slight, but possibly important, variations from the letter of the local regulations in the administration of quarantine. Also local regulations generally allow a wide latitude to the quarantine officer, and how this latitude is used, i. e., how the quarantine officer interprets the spirit of the regulations, is very important.

4. State what quarantine procedures, either under printed regulations or by custom, are enforced at the port, in addition to the requirements of the Treasury Department.

It should also be stated whether there is undue or unnecessary detention or disinfection of vessels.

5. State whether the inspection is maintained throughout the year or for what period, and what treatment of vessels is enforced during the entire year.

NOTE.—Many ports on the South Atlantic coast (e. g., Charleston, Savannah, and Fernandina) require certain ballasts to be discharged in quarantine without regard to season.

6. Are vessels from other United States ports inspected?

7. Describe quarantine procedures in the inspection of vessels, and, if infected, the treatment. Give time in quarantine (a) between arrival and commencement of disinfection, (b) time occupied by disinfection, and (c) time after completion of disinfection of vessels until discharge.

NOTE.—Quick or slow handling of a vessel is of more importance commercially than the question of fees. The time lost is the vessel's heaviest expense generally.

8. What communication is held with vessels in quarantine (and before quarantine by pilots, etc.) and how regulated? Is there any intercommunication allowed among vessels in quarantine?

9. State what will be done with a vessel infected with cholera; second, a vessel infected with yellow fever; third, a vessel infected with smallpox (said vessels carrying or not carrying immigrants), and what conditions are regarded as giving evidence of the vessel's infection in each case.

10. State whether records are kept at the station of the cases of disease that have occurred during the voyage, on arrival, and during detention.

11. Transmit schedule of quarantine fees, and give other fees and expenses necessarily and usually attendant on quarantine, as tonnage, ballast, wharfage charges, etc.

12. Make a statement showing the number of vessels arriving at the port during the preceding calendar year, by months—(a) from foreign ports; (b) from foreign ports in yellow-fever latitudes via domestic ports; (c) from domestic ports. Show also the character of the commerce carried on by the port, i. e., from what countries chiefly the vessels come, and whether in cargo, ballast, or empty.

13. State results of your visit to (a) the custom-house; (b) the immigration bureau.

14. State whether in your opinion the quarantine facilities are sufficient to care for the shipping entering the port.

15. Name the quarantine regulations of the Treasury Department which are not properly enforced, and state specifically whether the regulations regarding inspection and disinfection, and particularly the period of observation after disinfection, of vessels are observed.

16. Mention any facts which in your opinion should be known to the Department, bearing directly or indirectly upon the quarantine service, and make such recommendations as seem proper.

WALTER WYMAN,

*Supervising Surgeon-General Marine-Hospital Service.*

NOTE.—Report to be written on legal-cap paper (on one side only), signed, and inclosed in this blank as a cover.

In accordance with the above instructions reports were received from time to time from every port of entry and quarantine station of the United States, and, upon inefficiency being shown, the attention of the proper State or local quarantine authority was called thereto, and satis-

factory responses received or action was taken by the Bureau to remedy defects. At a great number of the smaller ports it was found that no facilities existed for the disinfection of infected vessels, and the collector of customs was thereupon given specific orders as to the disposition to be made of any infected vessel which might arrive.

The following letter, addressed to the collector of customs at Beaufort, S. C., is similar to a large number of letters addressed to collectors at other ports:

DISPOSITION TO BE MADE OF INFECTED VESSELS ARRIVING AT PORTS WHERE THERE ARE NO APPLIANCES FOR PROPER DISINFECTION.

TREASURY DEPARTMENT,  
*Washington, June 29, 1894.*

SIR: I would respectfully inform you that the local quarantine at Beaufort, S. C., has been inspected by Dr. J. H. White, passed assistant surgeon, Marine-Hospital Service, and report of said inspection made to the Supervising Surgeon-General of the Marine-Hospital Service, to the effect that there are no facilities for the disinfection of infected vessels which might arrive at Beaufort, required under the quarantine regulations of the United States approved April 26, 1894.

You are informed that infected vessels arriving at Beaufort, requiring disinfection under the quarantine regulations of the United States will be remanded to some other port for disinfection, in accordance with section 6 of the act granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service, approved February 15, 1893.

You will report by telegraph to the Supervising Surgeon-General of the Marine-Hospital Service the arrival of any infected vessel within your collection district.

Your attention is also called to that part of section 5 of the national quarantine act, above referred to, regarding the health certificate to be furnished by the health officer, and to article 1 (inspection), quarantine regulations, to be observed at ports and on the frontiers of the United States, dated April 26, 1894.

Respectfully, yours,

S. WIKE, *Acting Secretary.*

To the COLLECTOR OF CUSTOMS, *Beaufort, S. C.*

#### CONTROVERSY WITH THE LOUISIANA BOARD OF HEALTH.

In the course of the inspection of the local quarantines within his inspection district, Surg. J. M. Gassaway reported, under date of June 19, 1894, that the quarantine officer for the port of New Orleans was not giving the form of certificate of discharge from quarantine which is required by the law of February 15, 1893, and the regulations of the Treasury Department made thereunder. In accordance with this report, a letter was addressed to the quarantine officer for the port of New Orleans calling his attention to the fact that the proper quarantine certificate was not being issued, and requesting a compliance with the regulation. He replied, stating the matter had been referred to the State board of health.

In the meantime the following letter was addressed to the collector of customs:

TREASURY DEPARTMENT,  
*Washington, July 11, 1894.*

SIR: I have to inform you that the Louisiana State quarantine, located near the mouth of the Mississippi River, has been inspected by Surg. James M. Gassaway,

Marine-Hospital Service, and report of said inspection received by the Supervising Surgeon-General, which shows that a part of section 5 of the act granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service, approved February 15, 1893, and the quarantine regulations made thereunder (Art. X, par. 4), regarding the certificate to be furnished by the health officer at the quarantine station that the rules and regulations made by the Secretary of the Treasury have been complied with, are not being observed at the port of New Orleans.

You are informed that 500 blank certificates have this day been sent to Dr. Wilkinson, quarantine officer at Louisiana quarantine, with the request that this certificate be used in furnishing free pratique to vessels which require inspection under the quarantine regulations of the United States.

Respectfully, yours,

W. E. CURTIS, *Assistant Secretary.*

COLLECTOR OF CUSTOMS, *New Orleans, La.*

In the correspondence that ensued it was developed that the local quarantine officer was furnishing a certificate that the State board of health regulations had been complied with. Furthermore, that the State board of health regulations with regard to the detention of persons arriving on yellow-fever infected vessels was but three days, while the national regulations required five. A committee of the State board of health, including its attorney, appeared in Washington, with a view to a harmonious discussion of the matter and the arrival at some agreement. The agreement finally arrived at was to the effect that the quarantine certificate must show that the quarantine regulations of the Treasury Department had been complied with. It was urged, however, by this committee that the five days' detention required by the United States Quarantine Regulations was unnecessary at the port of New Orleans, and that the rule discriminated in favor of New York, for example, as against New Orleans. The following memorandum was submitted by myself:

MEMORANDUM.

The contention of the Louisiana board of health has been—

First. That fruit vessels would be detained under the Treasury Regulations. They have been shown that they misread the Regulations. There is no detention of their fruit vessels.

Second. That five days' detention is a new order sprung upon them. The order was issued in the Regulations of April 26. An inspection of their quarantine practice showed that the collector was receiving only a permit authorizing the vessel to come to the city—no certificate that the master had complied with the Regulations, which certificate is required by the law.

Third. That the five days' detention is unnecessary. This matter was carefully considered and thoroughly canvassed by the board appointed to frame the Regulations. The five days' detention is not imposed on the vessel, but on its personnel, and only when from a yellow-fever infected port or when the vessel has had yellow fever on board.

The number of said ports is relatively few. The Louisiana board requires three days' detention, and the additional two days is regarded as the minimum for safety.

Prior to issuing the Regulations every quarantine station on the Gulf Coast and on the Atlantic Coast as far north as Norfolk, Va., required five days' detention (and in some cases more than five), excepting recently New Orleans,

The period of incubation of yellow fever is frequently more than three days.

To obviate this five days' detention and permit passenger traffic between a Southern port and a yellow-fever infected port special provisions are made, which are complied with by the line of steamers plying between Havana and Florida ports. New Orleans may take advantage of the same provisions.

Fourth. That the rule is illegal which provides additional precautions for ports south of the southern boundary of Maryland, on the ground that the law states that the Regulations shall operate uniformly and must not discriminate against any port or place.

This contention would demand that exactly the same regulation should be made with regard to a vessel from a yellow-fever port arriving at Portland, Me., where the danger is nil, at a time when frost or ice prevails, and for a vessel arriving at New Orleans where the danger is great even while frost or ice is prevailing at Portland.

The "southern boundary of Maryland" line was adopted without protest by the conference of quarantine officers called to consider the first regulations issued.

The same principle prevailed all last year without protest.

As a result of the appeal of the Louisiana board of health, the amendment previously recorded in circular of August 16, 1894, was ordered to be made, which still provides for five days' detention of persons unless the vessel and its contents have been disinfected by a special acclimatized crew; the same being the Treasury Regulation which was in force before the revision, namely, in the Quarantine Regulations of 1893.

In closing this chapter on the Quarantine Laws and Regulations, I have to invite your attention to the necessity of Congress making some provision for carrying into effect section 8 of the act of February 15, 1893, which is as follows:

SEC. 8. That whenever the proper authorities of a State shall surrender to the United States the use of the buildings and disinfecting apparatus at a State quarantine station, the Secretary of the Treasury shall be authorized to receive them, and to pay a reasonable compensation to the State for their use, if in his opinion they are necessary to the United States.

Since the passage of this act two States, Pennsylvania and North Carolina, have practically surrendered their quarantine functions, and an important seaport of another State, Brunswick, Ga., has, under authority conferred by law, been deprived of its quarantine functions because of inefficiency.

The maintenance of these quarantine stations has been provided for in the appropriations for the present fiscal year, but other States and other local authorities are contemplating the surrender of their quarantine functions, and it is desirable that a definite policy regarding the stations so surrendered should be adopted and provision made for their equipment and maintenance through a general fund to be established for that purpose by fees collected from vessels or by direct appropriation, as may be determined by Congress.



## A CONSIDERATION OF CERTAIN DISEASES, THEIR NATURE AND PREVALENCE, AND SPECIAL PRECAUTIONS TAKEN WITH REGARD TO SAME.

I have the honor to submit the following concerning the prevalence of the several diseases named and the action of the Marine-Hospital Bureau or its representatives relative thereto:

### CHOLERA.

#### HISTORY OF CHOLERA IN EUROPE IN 1894.

The close of the year 1893 found cholera still present in Europe. In St. Petersburg the epidemic showed no sign of abatement, and in Austria, France, Holland, and Belgium choleraic cases and deaths continued to be reported. Choleraic infection had spread to the Canary and Cape de Verde Islands and threatened a reinfection of the western European seaports. Cholera persisted in Constantinople, and other localities of the Turkish Empire continued to report choleraic cases and deaths. The existence of active cholera foci in the most populous parts of Europe seemed to threaten a serious and general outbreak.

In January, 1894, cholera was reported from the Russian governments of Volhynia, Kovno, Kursk, Tambov, Tschernigov, Warsaw, Plock, and Radom and the Caucasian governments of Stavropol and Erivan. In Germany the epidemic seemed extinct. In France cholera had persisted in the northwestern seaboard provinces since 1892, and in January, 1894, it was still present. In Belgium a somewhat severe outbreak occurred at Namur, which was attributed to contamination of the river Sambre from a choleraic outbreak of the preceding year at Charleroi. In Austria-Hungary cholera was officially declared extinct. In Constantinople choleraic cases and deaths were reported, but in inconsiderable numbers.

The epidemic at Teneriffe, Canary Islands, was declared extinct. In India a sudden and severe outbreak, but on a limited scale, occurred at Nowapota, on the Eastern Bengal Railway.

In February cholera was officially declared present in Tripoli. At St. Petersburg the epidemic had completely disappeared. In France cholera was still present in the Department of Finisterre.

In March a recrudescence of cholera occurred in Constantinople. No official report was made of cholera from other localities in Europe.

In April cholera was still present in Constantinople and its vicinity; in France in Finisterre and Brittany; and in Russia in the provinces of Orel, Saratoff, Ufa, Elisavetpol, and the Don province, and in Russian Poland. In Austria-Hungary an outbreak was reported in Galicia. In Portugal an outbreak of choleraic disease occurred at Lisbon. The infection was undoubtedly conveyed from the Portuguese colony of St. Vincent, Cape de Verde Islands, where a serious epidemic of cholera had prevailed throughout the colony during the entire summer of 1893. In the spring of 1894 this epidemic became true Asiatic cholera of the most pronounced type. No precautions against importation were taken by the Portuguese Government, vessels from the Cape de Verde Islands being allowed harbor at Lisbon. On one of these, the *St. Tome*, cholera cases had occurred, and the disease naturally took hold in Lisbon. It was fortunately mild in type, and though 1,000 cases occurred there were only six choleraic deaths.

In May cholera was reported present in the Russian governments of Podolia, Bessarabia, Kieff, and Tschernig. At Constantinople the epidemic was reported

extinct. At Waldeck, a village in east Prussia, a case of cholera was observed, and in Austria-Hungary cholera was reported present in Galicia.

In June cholera was present at Sivas, Turkey in Asia, and spreading to neighboring localities. The sanitary situation of the Hedjaz was favorable. Three fresh cases were observed at the Prussian town of Myslowitz, in Upper Silesia, near the Russian border. Cholera was present throughout Russian Poland. The epidemic was reported extinct in Constantinople. In Italy one case was reported at Leghorn. On June 6 four cases of cholera were reported in Paris. That these were true cholera was shown by bacteriological test. The direct source of infection in these cases is undetermined. On June 16 cholera was reported present in Belgium, at Liège, and other localities, and to be spreading rapidly. Cholera was also reported present at Mecca, in Arabia.

By July 14 the epidemic manifestations of cholera had become more pronounced, especially in Russia, the disease being reported present in Warsaw, Grodno, Kielec, Radom, Plock, and Tula, and in St. Petersburg and Cronstadt. The presence of comma bacillus was demonstrated in seventeen of the nineteen cases that occurred in Cronstadt. The outbreak in St. Petersburg was more severe than in previous years, the conditions for the spread of the disease being intensified by the great heat of the summer. Cholera even penetrated into Finland. In Austria-Hungary the provinces of Galicia and Bukowina were reported infected. Cholera cases occurred at the quarantine station on the island of Fejan, near Stockholm, Sweden, on a vessel from St. Petersburg. Choleraic cases and deaths were reported from Liège, Belgium, and two cases from Holland. In the German Empire cholera cases and deaths were reported along the course of the Vistula. At Lubeck two deaths were reported on the steamships *Helix* and *Trave* from St. Petersburg. Cholera was also reported present in Hiogo, Japan. From Canton, China, 40,000 deaths from cholera were reported.

In August cholera continued present with marked severity in St. Petersburg and in other governments of Russia. Cases and deaths in considerable numbers continued to be reported from Austria-Hungary in Galicia and Bukowina. Cases and deaths were also reported from Amsterdam and Rotterdam, in Holland. In the epidemics of 1893 and 1894 the line of the spread of infection in Holland has been found to follow the course of inland water travel by river and canal boats. On August 7 the steamship *Baltimore*, from St. Petersburg for London, arrived off Gravesend and reported the death from cholera of one of her crew. Other cases occurred on board while the vessel lay in the Thames. Bacteriological test proved the cases to be true cholera. In Italy one case was reported at Procida. In Belgium an extension of the epidemic to many towns on the Meuse and Sambre was observed. In France the disease was termed cholérine. It continued to be reported at Paris, Marseilles, Bordeaux, Sorey, Monuel-sur-Seille, Avignon, Rheims, and Reuil.

In September cholera was present in the German Empire in the districts of the Vistula, Netze-Wartha, and the Rhine, and in Austria in Galicia and Bukowina; in France at Bordeaux and Cognac, and Belgium. In the Netherlands cholera was reported in ten localities, and in Russia in twenty-four governments and two cities. In Constantinople cholera was reported to be dying out, but in ten vilayets of the Turkish Empire cholera was reported present. Cholera was also observed at Rangoon, in Burmah.

In October cholera was still present in the German Empire, in the Vistula, Netze-Wartha districts, and the Rhine province, in Galicia, and Bukowina, in Russia, Belgium, the Netherlands, and in France at Cognac and Nantes.

In November the status of the epidemic was much the same as in October. Cases and deaths continued to be reported from the countries, districts, and localities previously reported infected. The conditions existing at the close of the active epidemic of 1894 indicate the dying down rather than the extinction of cholera, and suggest the question to what extent and under what local conditions may cholera acquire endemicity in temperate climates.

The history of choleraic epidemics in Europe previous to 1892 presents the same



sequence of moderate attack in the autumn, complete cessation during the winter, violent outbreak during the following summer, and then extinction.

The recent epidemics have not followed this sequence. The persistence of cholera in Europe during the past three years suggests a parallel between the manifestations of cholera in Europe and the phenomena observed with regard to this disease in the endemic area of cholera in India. In the lower valley of the Ganges cholera is always present, yet on careful examination it will be found that it is not continually present in any one locality, but is a veritable nomad, wandering about from place to place and breaking out in the form of fierce epidemics in localities where certain conditions of moisture, temperature, and impure water supply provide it with a suitable medium. Even within this endemic area it has, according to foreign writers, a tendency to die out locally, and after a violent outbreak it will withdraw from an infected locality and remain absent for a length of time. There appears to be a range of temperature and soil moisture within which cholera is prone to flourish, while an elevation or decline of either factor above or below this range appears to tend to its suppression. The coexistence or separation of these two conditions appears to account for the seasonal rhythm of cholera within its endemic area. Even in the few localities where cholera persists throughout the year two periods of aggravation and two of mitigation are observed. If cholera in India can be proved to be due not to an ineradicable germ, constantly present, but to repeated sowings of that germ in fresh and suitable soil, the same is probably true of the manifestations of the disease in Europe.

During the past few years it has become evident that there are large areas of country in Europe, notably in Russia, in which cholera tends to recur again and again and to become endemic in much the same way in which it is endemic in India, not fixed, but wandering about within an endemic area. This migratory character of European cholera is found to develop coincidentally with the large increase in the facilities for travel. The field for the successful resistance of cholera is clearly indicated. The efficacy of sanitary measures to prevent the formation of a choleraic focus and a consequent epidemic outbreak was demonstrated at Hurdwar, in India, in 1891, at the time of the kumbh, or great fair. The town of Hurdwar is not situated within the endemic area of cholera, but on the Upper Ganges, where the river issues, cool and clear, from the mountains, and it possesses a peculiar fascination for the dwellers in the hot, vaporious plains. The annual fair is always largely attended by pilgrims from all parts of India, and it frequently happens that the dispersion of this vast concourse is followed by a wide diffusion of cholera. In 1891 the great fair, which is held every twelve years and is considered an occasion of especial sanctity, drew to Hurdwar, which numbers only 29,000 inhabitants, a concourse of nearly 1,000,000 pilgrims; yet this vast assemblage met and dispersed without creating or spreading an epidemic of cholera. According to Dr. Ernest Hart, this immunity was due to the system of sanitary measures instituted and carried out by the sanitary commission of the northwestern provinces of India. As the result of these measures hygienic conditions were created and maintained in the presence of the most actively provoking sources of infection, and the crowd of pilgrims dispersed throughout the country without carrying an epidemic of cholera into the regions through which they passed.

A practical test of the responsibility of the Mecca pilgrimage in the generation of a general cholera epidemic has been suggested by Dr. Tholozan, physician to the Shah of Persia. It is to suspend for one year the great Mohammedan pilgrimage. This might be done if the great spiritual chiefs of Islam would use their great influence in favor of the plan. The objection to this proposition is that the laws of Mohammed require every Mohammedan to make the pilgrimage to Mecca once in his life, and that the suspension of the pilgrimage for one year would deprive some persons of the opportunity to perform this sacred duty. Dr. Tholozan recalls the fact that the epidemic in Europe of 1852 came from the borders of Poland and Germany and that of 1869 from the Ukraine, and he claims that the pilgrimage to the Hedjaz is not the invariable starting point of choleraic infection.

**CHOLERA AS REPORTED TO MARINE-HOSPITAL BUREAU FROM MAY 15, 1894, TO  
NOVEMBER 30, 1894.**

	Cases.	Deaths.		Cases.	Deaths.
Austria-Hungary:			Holland.....	532	265
Bukowina.....	863	490	India.....	.....	775
Galicia.....	14,408	7,905	Italy.....	2	1
Belgium.....	2,694	1,266	Japan.....	6	3
China (Canton).....	* 40,000		Russia.....	62,661	28,589
England.....		1	Spain.....	1	1
France.....		170	Sweden.....	29	5
Germany.....	988	321	Turkey.....	10,565	4,692

\* Lancet, July 21, 1894.

**THE RELATION OF INFECTED WATER SUPPLY TO THE SPREAD OF  
CHOLERA.**

The frequent spread of cholera through infected water supply has been thoroughly demonstrated, but by no one with greater clearness than by Dr. Ernest Hart, editor of the British Medical Journal. The subject is of such importance as to warrant the insertion of the following abstract of an address delivered by him before the American Medical Association:

"I think it is high time to put old notions aside, and that the spread of cholera should be looked at practically in the light of the accumulated evidence afforded by all the great epidemics of the past. That evidence clearly shows that cholera is a filth disease, carried by dirty people and spread by dirt and the use of dirty water. With pure water, pure air, pure soil, and pure habits, cholera need not be feared. I have been convinced that specifically polluted water is not merely an occasional or adjuvant cause, but the *causa causans* of almost every great epidemic of Asiatic cholera, and I have observed that when the use of the infected water has been abandoned or cut off the epidemic has ceased. These views have been fully borne out by a close observation of each successive cholera outbreak within the last thirty years.

"*English experiences, epidemic of 1831-1833.*—The general circumstances of the water supplies of England at that time were deplorably bad, and Dr. Snow, a few years later, collected information which led to the presumption that, as in subsequent epidemics, contaminated water in 1832 played an important part. Dr. Snow held that the cholera in 1848 was brought to London from Hamburg; that the infected sewage matter found its way partly through the soil into the wells and partly through sewers into the Thames and Lee, from which a portion of the water supply of London was derived. In the epidemic of 1853-54 Dr. Snow was called in to examine the water supply. His published report shows the clearly marked incidence of the disease on those who drank the water of the parish pump. It shows how the workers in one particular factory, where the water was always used, suffered severely from cholera, whilst those in an adjoining brewery, where the water was never used, escaped. In the epidemic of 1866, after investigation, the result showed that, owing to changes having been made in their filtering apparatus, the company had sent out for a few days unfiltered water, or water in a very partially filtered state, direct from the River Lee, which had just at that moment become infected with choleraic discharges.

"*Egyptian experiences.*—Since 1831 Egypt has been severely scourged by cholera at short intervals. The Nile is the main source of water supply to the whole country, and Dr. Sandwith, Sir W. Guyer Hunter, and others, have fully shown the fearful extent to which that river has been and is habitually polluted with human and other filth.

*French experiences.*—Marseilles has earned an unenviable notoriety as regards cholera in recent years, and there is much evidence that its public water supply, especially where derived from the sewage-polluted river Huveaune, has been responsible for the epidemics. At Toulon both its sanitary state and its water supply have been by no means satisfactory. The department of Finistere furnishes a very vivid object lesson in the spread of cholera by dirt, sewage-polluted well water, and specifically contaminated public fountains. In November, 1884, there was a sharp outbreak of cholera in the western suburbs of Paris, the mortality rising rapidly and then as rapidly declining, in the manner characteristic of water-borne epidemics, and I had excellent reasons for believing that the epidemic was due to the temporary distribution of highly polluted water to particular districts of the city.

*Italian experiences.*—The severest outbreak occurred in Naples in August, 1884. At that period the water supply of Naples was mainly derived from trenches running from house to house underground, and was exposed to direct contamination, not only by soakage of filth, but by the reckless practice of washing in the trenches linen soiled with choleraic discharges. In the following year Naples was supplied with pure water, and there followed a marked immunity of the city from cholera, notwithstanding the presence of the disease in the neighborhood. In Palermo, in 1885, the water was obtained from open trenches passing beneath the houses, partly from public fountains and partly from wells exposed to contamination. The early termination of the epidemic was due to the prompt dealing with the dangerous water sources.

*Spanish experiences.*—In 1885 Spain was the scene of a cholera outbreak of exceptional ferocity. In a work published in 1886 Mr. George Higgin shows that the disease never became truly epidemic or dangerous in any Spanish city in which there was a pure supply of water.

*Russian experiences.*—The complete history of cholera in Russia in 1892 still remains to be written, but what we know of it bears out previous experiences as to the influence of infected water. At Ashabad, out of the 13,000 inhabitants, 10 per cent died. The cause of this outbreak was traced to a small stream of water which supplied the town, and which it was found had been fouled by filth from a small village on its banks where cholera had broken out four days previously.

*Cholera at Hamburg in 1892.*—The influence of the public water supply in disseminating the disease may be seen in the incidence of the disease respectively on Hamburg, Altona, and Wandsbeck. Wandsbeck (supplied with spring water), with a population of 20,571, had 64 cases. Altona (water from the Elbe, but passed through a good gravel filter), with a population of 173,279 inhabitants, had 572 cases, and Hamburg (water from the Elbe), with a population of 579,907 inhabitants, had 17,891 cases.

*Indian experiences.*—In India, as elsewhere, water has been the chief nurse and disseminator of cholera, and I believe that if every town and village in India were provided with pure and properly protected water, the so-called "endemic area" would soon become indefinite. The experiences of Calcutta go to show that those persons who have an abundant and pure water supply, namely, the Europeans and better class of natives, escape cholera epidemics, while the natives, who necessarily depend on tank water, suffer severely when a tank becomes polluted."

#### CHOLERAIC INOCULATION AS A PREVENTIVE OF CHOLERA.

During the past year (1894) Haffkine has continued his investigations and experiments in choleraic inoculation as a preventive of cholera. These experiments have been carried on in India, and since the arrival of Mr. Haffkine in that country a total of over 32,000 inoculations have been performed. Of this number about two-thirds have been reinoculated, bringing the number of performed inoculations up

to about 50,000. Of this number of people, but few cases have come under observation as having been exposed to cholera. The following statement and figures, which are Mr. Haffkine's, show the result in those cases:

"In Calcutta inoculations have been carried out from the beginning of March of this year till the present time; 3,478 persons have submitted themselves to inoculation. In 13 houses cholera appeared from two to one hundred and eighty days after the inoculations had been carried out. The total number of the inhabitants of these houses was 181. Out of this number 85 were inoculated, 96 untreated. The number of cases of cholera that occurred among the 85 inoculated is 1, which was followed by a fatal issue, giving a percentage of attacks and deaths of 1.18 per cent. The number of attacks among the 96 noninoculated was 15, and of deaths 11, giving a percentage of cases 15.63 per cent., and of deaths total 11.63 per cent.

"Of soldiers who had been inoculated by Mr. Haffkine in Cawnpore thirteen months previously, 75 were present on the occasion of the epidemic of last August, and were located in barracks with 177 noninoculated. During the epidemic 19 cases of cholera and 13 deaths occurred among the noninoculated. No cases occurred among those who had been treated.

"The number of observations is not sufficient, and the time is not ripe for discussion, nor for any attempt to bring about a general consensus of opinions.

"I will point out, however, one fact, namely, that the harmlessness of the operations, whether in the presence or absence of cholera, is now definitely established. This is proved by the examination of the figures. Summarizing the occurrences among the inoculated and uninoculated, and disregarding the question whether they were accidental or not, we have the following results: Total number of those on whom observations have been made in Calcutta, Gaya, Cawnpore, and Lucknow is 2,235. Of these 500 were inoculated and 1,735 not inoculated.

"Inoculated had 21 attacks and 19 died, giving a percentage of cases to total of 4.2 and deaths to total of 3.8 per cent. Uninoculated had 174 attacks and 113 died, giving a percentage of cases to total of 10.63 per cent and deaths to total of 6.51 per cent.

"These figures not only show that the inoculations are harmless, but show a difference in the occurrences that, if interpreted, can only be interpreted in favor of the inoculation."

At the recent Indian Medical Congress the remarks made by different speakers in connection with Mr. Haffkine's communication to the congress on anticholeraic inoculations were, with one exception, distinguished by hopeful views for the future of this form of preventive inoculation.

#### NO CHOLERA IN THE UNITED STATES.

Owing, it is believed, in large measure to the quarantine regulations of the Government at foreign ports, as well as at domestic ports, no case of cholera occurred in the United States. A suspicious case, however, occurred in the person of an immigrant after arrival in the United States, as will be seen by the following letter from the secretary of the board of health of Cumberland, Md.:

DEATH OF A GERMAN IMMIGRANT AT CUMBERLAND, MD., WITH SYMPTOMS RESEMBLING THOSE OF CHOLERA.

CUMBERLAND, MD., September 6, 1894.

SIR: Peter Walther, the German immigrant who died here last night at 8.15 p. m., was a passenger on steamship *Elbe*, from Bremen, which arrived in New York Sep-



tember 3 He came by way of the Baltimore and Ohio Railroad, and reached here September 5, 9.30 a. m. He says he was sick on vessel, and that the surgeon gave him medicine which relieved him temporarily. He was taken ill early in the morning, September 5, near Cumberland. When I first saw him he was in collapse, and remained in that condition for several hours. He had ten stools before I saw him, and vomited constantly a thin, watery fluid.

After treatment was begun he showed signs of reaction and the pulse returned at the wrist. No vomit or stools after this time. He remained in this condition until 7 o'clock p. m., when he grew worse, and died, as stated, about an hour later. Was conscious till the last. I could find no excretions at all in any of the cavities, and there seemed to be a total dryness of the tissues throughout the body. The body was rigid in less than an hour after death. He was thoroughly disinfected, as well as the car in which he was kept, and was buried early this morning several miles from this city. His fellow-passengers are detained in quarantine near Pittsburg, Pa. I regret I am not able to furnish dejecta, but the closet in immigrant station was used, and after I took charge of the case there was no stool. Any other information I can furnish will be done willingly.

Respectfully,

E. T. DUKE, M. D.,  
*Secretary Board of Health.*

SURGEON-GENERAL MARINE-HOSPITAL SERVICE.

A medical officer of the Marine-Hospital Service was immediately dispatched to Cumberland, Md., to make a bacteriological examination, and reported as follows:

WASHINGTON, D. C., *September 13, 1894.*

SIR: In accordance with your instructions of the 7th instant, I have to report that I arrived at Cumberland on the morning of the 8th, and, accompanied by Health Officer E. T. Duke, had the body of the patient, Walther, who was reported to have died of cholera, exhumed, and obtained a portion of the contents of the intestinal tract. I have further to report, as a result of a bacteriological examination, the entire absence of the spirilla of Asiatic cholera.

Respectfully,

H. D. GEDDINGS,  
*Passed Assistant Surgeon, Marine-Hospital Service.*

SURGEON-GENERAL MARINE HOSPITAL SERVICE.

On the receipt of the above information word was telegraphed to the health officer at Pittsburg, who had been detaining a number of immigrants in that city, companions of the deceased patient, and the surveillance of these immigrants ceased.

#### THE INTERNATIONAL SANITARY CONFERENCE AT PARIS.

Though the Sanitary Conference of Paris, February 7 to April 3, 1894, was called primarily for the prevention of the spread of cholera from Asiatic to European countries, the United States was directly interested, and it is pertinent here to give a summary of the proceedings of this conference. While the conclusions arrived at and the recommendations made are of decided value, at the present writing no information has been received that the measures urged have been put into practical effect.

*Abstract of proceedings of the Second International Sanitary Conference, held at Paris February 7 to April 3, 1894.*

The following abstract has been prepared in the Bureau from the official report of the conference. The delegates to this conference on

behalf of the United States were, as stated on page 57, No. 5, Volume IX, Abstract of Sanitary Reports, Dr. Stephen Smith, of New York; Dr. E. O. Shakespeare, of Philadelphia, and Surg. Preston H. Bailhache, United States Marine-Hospital Service.

The Second International Conference of Paris was called to complete the work of the preceding conference of Venice and Dresden. The countries officially represented were Austria-Hungary, Belgium, France, Germany, Great Britain, Greece, Italy, Netherlands, Portugal, Russia, Spain, Sweden and Norway, Persia, Turkey, and the United States. The conference began its sessions February 7, 1894, under the presidency of M. Casimir-Perier.

The subjects proposed for consideration were:

I. Prophylaxis of the pilgrimage to Mecca.

II. Protection of the Persian Gulf ports.

The programme of discussion was formulated as follows:

I.—Prophylaxis of the pilgrimage to Mecca.

(A) Sanitary police in Indian ports.

1. Medical inspection of pilgrims.

2. Disinfection.

3. Refusal of embarkation to infected or suspected persons.

4. Refusal of embarkation to all pilgrims who shall fail to show that they possess means to defray the expense of the pilgrimage; five days' observation of other pilgrims.

5. Sanitary passport.

6. Disinfecting apparatus on each vessel.

7. Adequate supply of potable water protected from infection.

(B) Sanitary surveillance of pilgrims at the entrance of the Red Sea.

1. Choice of site for quarantine station.

2. If Camaran be chosen, improvements to be instituted.

3. Disinfecting apparatus.

4. Formation of board of management to be under the control of the sanitary council of Constantinople.

(C) Improvements to be instituted at Abou Saad and Vasta.

(D) Supervision of land caravans of pilgrims to Mecca.

(E) Reorganization of the sanitary station of El Tor.

II.—Protection of the Persian Gulf ports.

(A) Establishment of sanitary posts at Fao, Bender Abbas, Koweit, Bender-Bushir, Bassorah, Mohammerah.

(B) Sanitary surveillance at Menama, in the Bahrem group of islands.

(C) Sanitary supervision at Mascate and Gadar, in Beloochistan.

(D) Constitution of a sanitary authority to have charge of carrying out quarantine measures.

For the facilitation of business the conference was divided into three committees, as follows: Red Sea commission, Persian Gulf commission, and committee of ways and means.

Before stating the results of the conference of Paris, it may be well to summarize the results of the conferences immediately preceding.

The first step toward international action in regard to public sanitation and maritime quarantine was taken by the French Government in 1847, in appointing medical sanitary agents in the East. The posts of observation thus created were at Constantinople, Smyrna, Beirut, Alexandria, Cairo, and Damascus. The information in regard to sanitary conditions in the East derived from these sources formed the basis for the conference of Paris, which was convened on invitation from the French Government in 1851. Twelve Powers were represented by delegates at this conference. The results obtained were a relaxation in the rigor of quarantine in Mediterranean ports and a scheme of rational maritime prophylaxis.

The succeeding conferences were more or less diplomatic and international in character. The conference of Venice in 1892 was called to consider the means of preventing direct communication between Europe and the infected regions of India, by way of Egypt and the Mediterranean. The conference succeeded, first, in regulating the duration and method of quarantine in the Suez canal; second, in preventing the passage through the canal of infected vessels; third, in requiring disinfection of suspected vessels; fourth, in creating the council of Alexandria, with a preponderance of European influence.

The resolutions adopted by the conference were embodied in an agreement which was signed by the plenipotentiaries and afterwards ratified by the powers represented, and the Khedive directed that the provisions therein contained should go into effect November, 1893.

The Eighth International Sanitary Conference met at Dresden March, 1893. The programme proposed for consideration the following subjects:

1. The duty of a Government when cholera is reported present within its territory.
2. The measures to be taken when cholera exists in a neighboring country.

The conference decided that the declaration of the presence of contagious disease is obligatory and that every means should be taken to prevent its spread. It formulated a system of sanitary measures which afforded a maximum of protection for public health, with a minimum of restriction on travel and traffic, fixed the period of detention and isolation, defined the distinction between medical surveillance and observation, and permitted a person arriving from an infected port to proceed to his destination, keeping him, when arrived, under observation during the period of incubation.

The first session of the conference, February 7, 1894, was occupied with the organizing of committees and the formulation of the programme of the conference.

The second session, February 14, was opened by the discussion of the quarantine and sanitary measures proposed for the Red Sea and the Hedjaz by the Ottoman Government. The Ottoman delegates showed a disinclination to accept international intervention in regard to the pilgrimage to Mecca.

At the third session, February 20, Dr. Shakespeare, delegate from the United States, drew attention to the fact that the preceding conferences had failed to provide for the sanitary supervision of immigration from Europe to America. He showed that immigration created an intimate relation between the sanitary condition of Europe and that of the United States. More than 400,000 immigrants from Europe and Asia Minor arrive annually in United States ports. The importation of cholera from the East into Europe by means of infected articles indicates the bases for measures of prevention against the introduction of cholera into the United States. In reply to this statement the delegates of France, Germany, Belgium, the Netherlands, Great Britain, Italy, and Austria-Hungary said that their respective Governments would probably consider a plan of reciprocal action with the United States with regard to the sanitary supervision of immigration. The president of the conference inquired whether Dr. Shakespeare based his proposition on the acceptance by his Government of the principles adopted by the conferences of Venice and Dresden. To this Dr. Shakespeare replied that there were general analogies but differences of detail between the pilgrimage and immigration, and furthermore that his Government had not been represented at the conferences of Venice and Dresden and had not formally accepted the principles adopted by those conferences.

#### PROTECTION OF THE PERSIAN GULF.

At its fourth session, February 28, 1894, the conference discussed the propositions submitted to it by the Persian Gulf committee. These propositions were prefaced by a brief description of the littoral of the Persian Gulf and of the conditions which render sanitary surveillance of the gulf ports essential to the protection of Europe against cholera. The ports named were Kuratchee, Gwadar, Mascate, Jastek, Bender Abbas, Lingeh, Bender Bushir, Fao, Mohammerah, Koweit, and Bahrein. They may be described as follows:

Kuratchee, port of northwestern India and eastern Beloochistan, second in importance only to Bombay. It possesses a superb harbor. It is the site of a government sanitarium and is a railway terminus.

Bender-Bushir, the most important port in Persia and the center of the maritime commerce of that country.

Koweit, the center for the trade in horses and cattle.

Bahrein, the principal island of an archipelago of 50,000 inhabitants. It is the central station of the pearl fisheries. In summer as many as 2,500 fishing boats with a complement of men numbering 25,000 assemble there.

The other ports named are small, but they maintain an active trade and are in weekly communication with Bombay, with which port they are connected by a line of six steam vessels belonging to the British India Steam Navigation Company. There is not a single sanitary agent at any one of the ports named and no sanitary surveillance of the coast line along its entire length.

The Ottoman Government proposes to establish a large lazaretto at Fao, on the west or Ottoman shore of the Shat el Arab, and a second lazaretto on the island of Salahigé, near Bassorah, and create a post of sanitary observation in the bay of Koweit, but these defensive measures will prove inadequate unless similar measures are taken on the Persian littoral of the gulf. The Persian Gulf committee have determined that sanitary agents should be stationed at the ports of Bender-Abbas, Bender-Bushir, and Mohammerah, and that sanitary surveillance is a necessity at the ports of Gevodar (Beloochistan), at Menama (capital of the Bahrein Islands), and at Muscate, on the coast of Oman.

The measures proposed by the committee were in detail as follows: (1) Sanitary regulations for vessels plying in the Persian Gulf; (2) sanitary posts. (See Annex 3.) These propositions were unanimously adopted by the conference, with the exception of the British delegates.

It may be noted here that the Persian Gulf committee was seriously divided in opinion as to the organization of the sanitary service for the Persian Gulf. The Ottoman delegates claimed that the council of health of Constantinople, aided by the Persian authorities, should be charged with the application of quarantine measures in the Persian Gulf. To this Dr. Pagliani (Italy) objected that the councils of health of Constantinople and Teheran were not so constituted as to afford the guaranties required by the conferences of Venice and Dresden.

M. de Giers (Russia) stated that there were serious objections to the connection of the sanitary service of the Persian Gulf with the council of Teheran. He stated that the existence of epidemic diseases in the ports of the Persian Gulf is now reported to the foreign legations by the council of health of Constantinople through its delegate at Teheran. He also drew attention to the absence of a protective system in Persia along the lines of land travel.

In this connection Count Rufstein (Austria-Hungary) proposed the organization of an international sanitary service in Persia, providing for: (1) A central health bureau at Teheran; (2) an international sanitary council; (3) posts of observation, sanitary posts; (4) lazarettos. The total annual cost of this system he estimated at 500,000 francs, to be divided as follows: European powers, 200,000 francs; Persia, 300,000 francs, plus the original cost of erecting buildings, etc.

The indifference of the Persian authorities to the importation of cholera and the total neglect throughout Persia of all sanitary precautions in regard to disinfection, water supply, hygienic conditions in cities, and the disposal of the dead seem to show that international control of sanitation in Persia is necessary for the protection of Europe. The question of the creation of a competent authority for applying quarantine measures in the Persian Gulf and the adjustment of expenses was referred to the committee on ways and means.

The British Indian delegates objected to the quarantine system proposed for the Persian Gulf. They stated that 98 per cent of the trade of the gulf is carried in Anglo-Indian vessels; that very few pilgrims reach the Hedjaz by way of the Persian



Gulf, and that the secretary of state of India has never received a report of an outbreak of cholera on a vessel from an Indian port trading in the Persian Gulf. They stated that their Government would consider the system proposed as a hindrance to traffic and would not consent to bear its part in the expense. They also objected to the location of a quarantine station at Fao on account of bad anchorage, insufficient water supply, insecure soil, and the presence of a form of pernicious fever, and claimed that reciprocal quarantine at Bassorah and Mohammerah would furnish ample protection against cholera for both the Ottoman and Persian coasts of the gulf.

Dr. Shakespeare (United States) introduced a resolution for the establishment of a large sanitary post similar to that at Camaran on one of the islands off Ras Mesandown, to have supervision of all pilgrim vessels entering the Persian Gulf, and to be under international control and maintained at international expense.

*Annex 1.—Text of the agreement in regard to maritime quarantine signed by the delegates to the International Sanitary Conference of Paris, 1894.*

(A) Sanitary police at the ports of departure of pilgrim vessels arriving from the Indian Ocean and Oceanica.

1. Medical inspection of all persons taking passage on board a pilgrim vessel made individually, by daylight, on land, and by a physician appointed by the local sanitary authority.

2. Thorough disinfection made on land under the direction of the physician appointed by the sanitary authority of all infected or suspected articles.

3. Refusal of embarkation to any person attacked with cholera or choleric form disorders.

4. When a case of cholera exists at the port embarkation on board of pilgrim vessels shall not take place until the persons to be embarked have been segregated and subjected to observation for five days.

(This article is subject to local modifications.)

5. Pilgrims shall be required to show that they possess means sufficient to defray the expenses of the voyage, going and returning, and for their maintenance at the holy places.

(B) Measures to be taken on board pilgrim vessels.

#### SECTION 1.—GENERAL REGULATIONS.

ARTICLE 1. These regulations apply to vessels transporting Musselman pilgrims to or from Mecca.

ART. 2. A vessel shall not be considered a pilgrim vessel which carries pilgrims of the better class as passengers in a proportion of less than 1 pilgrim to 100 tons burden.

ART. 3. All pilgrim vessels on entering or leaving the Red Sea shall comply with the regulations contained in the special regulations for the pilgrimage to the Hedjaz, to be published by the council of health of Constantinople in conformity with the principles laid down by the conference of Paris.

ART. 4. Steam vessels only shall carry pilgrims.

#### SECTION 2.—MEASURES TO BE TAKEN BEFORE DEPARTURE.

ART. 5. The captain of a pilgrim vessel is required to declare to the port authority at least three days in advance his intention of embarking pilgrims. He must also declare the date of intended departure and the port of destination.

ART. 6. The sanitary authority of the port shall then inspect and measure the vessel. The consul representing the flag carried by the ship may assist, if he so desires, at this inspection.

ART. 7. The port authority shall not permit the departure of a vessel until he is assured—

(a) That the vessel is clean and, if possible, disinfected.

(b) That it is in condition to undertake the voyage and that the sanitary conditions are good.

(c) That the food and fuel provided for crew and passengers are sufficient in quantity and good in quality.

(d) That the water is good and obtained from a pure source; that it is sufficient in quantity, protected from contamination on board, and dispensed by faucets.

(e, f, g, h) That the vessel carries distilling apparatus capable of producing 5 liters of water a day per capita for all persons on board, passengers and crew; that it carries a disinfecting stove and has on board a physician and a ship's medicine chest, and that the deck is clear.

ART. 8. The captain shall post notices drawn up in the principal languages spoken by the pilgrims stating—

1. Destination of the ship.

2. Daily ration of food and water.

3. The price of provisions not included in the daily distribution.

ART. 9. The captain shall not be free to leave port until he holds—

1. A list of the pilgrims whom he is authorized to embark, viséed by the port sanitary officer.

2. A bill of health stating the name, nationality, and tonnage of the vessel, name of the captain and physician, the number of persons embarked—crew, passengers, and pilgrims, nature of the cargo, place of departure and destination, and condition of public health in the port of departure.

ART. 10. The port sanitary authority shall take effective measures to prevent the embarkation of suspected persons and articles.

#### SECTION 3.—PRECAUTIONS TO BE TAKEN DURING THE VOYAGE.

ART. 11. Every vessel embarking 100 or more pilgrims shall carry a physician commissioned by the Government to which the vessel belongs. If the number of passengers exceeds 1,000 a second physician shall be engaged.

ART. 12. The physician should see that the rules of hygiene are observed on board, and that food and water are distributed according to agreement.

ART. 13. Pilgrims shall be lodged between decks.

ART. 14. The deck should remain clear. It should be placed at the disposal of the passengers.

ART. 15. Passengers shall be allowed to retain only such baggage as is strictly necessary.

ARTS. 17, 18, 19. The vessel shall be provided with latrines in the proportion of 1 to each 100 passengers. These shall not be located in the hold or between decks. They shall be cleaned three times daily and flushed with sea water.

ART. 20. Each person shall be gratuitously furnished with 5 liters of drinking water a day.

ART. 21. If there shall arise any doubt as to the condition of the drinking water, it should be boiled and sterilized, and the captain is directed to empty it overboard and replenish at the first stopping place.

ART. 22. Two kitchens shall be provided for the use of the pilgrims. They shall not be allowed to cook elsewhere.

ART. 23. Medical care and attendance shall be furnished gratuitously to the pilgrims.

ART. 24. A regularly organized infirmary shall be provided for the sick. It shall be large enough to accommodate 5 per cent of the passengers, with a space of 3 square meters per capita.

ART. 25. The vessel shall be provided with the means of isolation in case of choleraic attack. All articles that have come in contact with the sick shall be promptly disinfected. Articles of no value should be thrown overboard if the vessel is at sea, or else burned if the vessel is at port.

ART. 26. In case of a death occurring on board during the voyage the captain shall note the fact with all particulars.

ARTS. 27, 28. The bill received at the port of departure shall not be altered in any way during the voyage. It shall be viséd in every port at which the vessel stops by the sanitary authority, who shall note thereon:

1. The number of passengers landed or embarked.

2. Any facts touching the condition of the passengers and any incidents of the voyage.

3. The sanitary condition of the port at which the vessel is stopping.

ART. 29. The captain shall see that all prophylactic measures taken on board during the voyage are inscribed in the log.

ART. 30. The captain shall pay all sanitary taxes.

Section 4 relates to fines and penalties.

These regulations were adopted unanimously in committee except for the votes of the Ottoman and Greek delegations.

#### *Annex 2.*

#### SANITARY SUPERVISION OF THE PILGRIMAGE BY WAY OF THE RED SEA.

Pilgrim vessels arriving from the south shall, before proceeding to the Hedjaz, touch at the sanitary station at Camaran and there be subject to the following treatment:

Vessels declared upon medical inspection to be clean shall be allowed free pratique after compliance with the following regulations: The pilgrims shall be disembarked; they shall take a spray bath or a bath in the sea; their soiled linen and such of their baggage and effects as may be suspected of infection shall be disinfected. The duration of this process, including landing and reembarkation, shall not exceed forty-eight hours. If during this period no case of cholera, diarrhea, or choleriform disorder shall develop, the pilgrims shall be at once reembarked and the vessel shall proceed to the Hedjaz.

Suspected vessels—that is to say, vessels on board of which cholera declared itself at the moment of departure, but on which no new case has occurred within seven days—shall be treated as follows: The pilgrims shall be disembarked; they shall take a spray bath, or else a bath in the sea; their soiled linen and such of their baggage and effects as may be suspected of infection shall be disinfected, at the discretion of the medical officer. The duration of this process, including landing and reembarkation, shall not exceed forty-eight hours. If no case of cholera or choleriform disorder shall develop during this period, the pilgrims shall be at once reembarked, and the vessel shall proceed to Djeddah, where a second medical inspection shall be made on board. If the result is favorable, on the written and certified declaration, under oath, that no case of cholera has occurred during the voyage from Camaran, the pilgrims shall be disembarked. If, on the contrary, cholera or choleriform disorder shall have declared itself during the voyage, or at the moment of arrival, the vessel shall be remanded to Camaran, and there undergo a second time the treatment for infected vessels.

Infected vessels—that is to say, vessels on board of which cholera or choleriform disorder shall have declared itself within seven days—shall be treated as follows: The persons attacked with cholera or choleriform affections shall be disembarked and isolated in hospital. Thorough disinfection shall be performed. The other passengers shall be disembarked and isolated in groups, consisting each of as few persons as possible, in order that only a small front shall be exposed to choleraic attack should the disease develop. The soiled linen, utensils, and clothing of crew and passengers shall be disinfected; also the vessel itself.

The sanitary authorities shall decide whether the unloading of the larger baggage and the cargo is necessary, and whether the entire vessel or only a portion of it shall be disinfected.

The passengers shall remain five days at Camaran. If the cases of cholera date back for several days, the period of isolation may be curtailed. It shall vary according to the date of the last outbreak and in the discretion of the sanitary authority.

The vessel shall proceed to Djeddah, where thorough medical inspection shall be made on board. If the result is favorable the pilgrims shall be disembarked. If, on the contrary, cholera or choleraform disorder shall have developed on board, either at the moment of arrival or during the voyage from Camaran, the vessel shall be remanded to Camaran, and shall there undergo for a second time the treatment for infected vessels.

IMPROVEMENTS TO BE MADE AT THE SANITARY STATION OF CAMARAN.

(A) Complete abandonment of the island by its inhabitants.

(B) Means of securing the safety and facilitating the movement of vessels in the Bay of Camaran.

1. Installation of buoys and lights in sufficient numbers.
2. Construction of a mole or quay for landing passengers.
3. Separate wharfs for the landing of pilgrims belonging to the several encampments.
4. Lighters in sufficient numbers, with a steam tug, to facilitate the landing of passengers.

(C) Installation of a sanitary station, which shall comprise—

1. A system of railways connecting the wharfs with the executive and disinfection buildings and the camps.
2. Executive buildings and quarters for sanitary guards and others.
3. Buildings for the washing and disinfecting of nonportable and other articles.
4. Bath and dressing rooms for pilgrims.
5. Separate hospitals for the two sexes, completely isolated: (a) For the observation of suspects; (b) for cholera patients; (c) for contagious diseases other than cholera; (d) for ordinary diseases.

6. The camps shall be entirely separate and distinct from each other, and at as great a distance from each other as possible. The quarters for pilgrims shall be constructed under the best possible hygienic conditions and shall not contain more than twenty-five persons each.

7. There shall be a cemetery reservation, well located, remote from habitations, not in contact with the subterranean water level, and drained at a depth of 50 centimeters below the level of the graves.

(D) Necessary sanitary appliances.

1. Steam stoves.
2. Sprayers and chemical disinfecting apparatus and agents.
3. Distilling machines for the sterilization of water by heat and for the manufacture of ice; for the distribution of potable water, a system of water-supply pipes and closed reservoirs, air tight and emptied by pumps or stopcocks.
4. Bacteriological laboratory.
5. Installation of movable receptacles for fecal matter. Such matter shall be spread on a portion of the island remote from the camps.

6. Waste water shall be removed from the camps before it has time to stagnate.

(E) The sanitary authority shall see that each camp is furnished with shops for food and fuel.

The tariff of prices shall be fixed by a competent authority. The quantity and quality of the food supplied shall be inspected daily by the camp physician. Water is furnished gratuitously.

## IMPROVEMENTS TO BE INSTITUTED AT THE SANITARY STATIONS OF ABOU-SAAD, VASTA, AND ABOU-ALI.

1. Establishment of two cholera hospitals, for men and women, at Abou-Ali.
2. Establishment of a hospital at Vasta for ordinary diseases.
3. Erection at Abou-Saad and Vasta of stone buildings capable of accommodating 500 persons in the proportion of 25 each to a building.
4. Installation of three disinfecting stoves at Abou-Saad, Vasta, and Abou-Ali.
5. Erection of spray baths at Abou-Saad and Vasta.
6. Installation of distilling machines, capable of furnishing each 15 tons of water per day, at Abou-Saad and Vasta.
7. The regulations in regard to cemeteries, fecal matter, etc., shall be the same as those in force at Camaran.
8. Disinfecting stoves and appliances shall be installed at Djeddah and Yambo for the sanitation of pilgrims leaving the Hedjaz.

## REORGANIZATION OF THE SANITARY STATION OF DJEBEL-TOR.

With regard to the station at El Tor, the contracting powers leave it to the maritime council of Alexandria to carry out the plan agreed upon at the conference of Venice, observing only—

1. That it is necessary to have distilling machines at the station for sterilizing water.
2. That all provisions brought by pilgrims of Djeddah and Yambo, when cholera prevails in the Hedjaz, shall be disinfected, or completely destroyed when found to be unsanitary.
3. That measures should be taken to prevent pilgrims using leather water vessels, these water bottles to be replaced by vessels of terra cotta or by metallic buckets.
4. That each section of the camps should be provided with a physician.
5. That a port captain should be appointed at El Tor to direct landings and reembarkations and to enforce the observance of the regulations by the ships' captains.

## REGULATIONS FOR PILGRIMS ARRIVING FROM THE NORTH.

1. *Outward bound.*—If cholera is not reported present at the port of departure, and if no choleriform disorder has declared itself during the voyage, the vessel shall be at once admitted to free pratique. If cholera is reported present at the port of departure or in its vicinity, or if a choleriform disorder has developed during the voyage, the vessel shall undergo at El Tor the treatment prescribed for vessels arriving at Camaran from the south.

2. *Homeward bound.*—If cholera is not reported present in Hedjaz and has not been so reported during the pilgrimage, the vessel shall be subject at El Tor to the treatment prescribed for clean vessels at Camaran—that is to say, pilgrims shall be landed; they shall take a spray bath, or a bath in the sea; such of their baggage and effects as may be suspected of infection shall be disinfected, at the discretion of the sanitary authority, the duration of the whole process, including landing and reembarkation, not to exceed forty-eight hours. If cholera is reported present in the Hedjaz, or has been so reported during the pilgrimage, the vessel shall be subject at El Tor to the treatment prescribed for the treatment of infected vessels at Camaran—that is to say, the persons attacked with cholera or choleriform disorder shall be landed and isolated in hospital. Thorough disinfection shall be performed. The other passengers shall be isolated in groups, consisting each of as few persons as possible, in order to present a small front to choleraic attack in case of an outbreak in any particular group. The soiled linen, clothing, and utensils of passengers and crew shall be disinfected, also the vessel itself. The local sanitary authority shall decide whether the unloading of the larger baggage and the cargo is necessary, also whether the entire vessel or only a portion of it shall be disinfected. All pilgrims

shall be subjected to an observation of seven full days, dating from the termination of the process of disinfection. If a choleric disorder develops in any section, the period of seven days shall begin, for this section, from the day on which the last case was declared.

SANITARY MEASURES TO BE APPLIED TO PILGRIMS LEAVING THE HEDJAZ BY THE SEAPORTS.

The measures to be adopted for the departure of pilgrims going south from Djeddah and Yambo shall be the same as those in force for the departure from ports situated beyond the Straits of Bab-el-Mandeb, viz:

1. Medical inspection made individually, by daylight, on land, and at the moment of departure, by a physician appointed by the local sanitary authority, of all persons taking passage on a pilgrim vessel.

2. Thorough disinfection made on land, under the superintendence of the physician appointed by the sanitary authority, of all infected or suspected articles under provisions of article 5 of the first regulations inserted in Annex IV of the conference of Venice.

For all pilgrims embarking on vessels going north disinfection shall be performed at El Tor, except when cholera prevails in the Hedjaz. In this case the measures herein named shall be applied to these vessels at Djeddah and Yambo.

(Abou-Saad, Abou-Ali, and Vasta are small islands situated near Djeddah, on which a lazaretto has been established.)

*Annex 3.—Protection of the Persian Gulf.*

REGULATIONS.

An infected vessel is one which has cholera on board, or on which new cases have occurred within seven days.

A suspected vessel is one which has had cholera on board, either at the time of departure or during the voyage, but on which no new case has occurred within seven days.

A clean vessel is one which, although it may arrive from an infected port, has had no case of cholera on board, either at the time of departure, during the voyage, or at the time of arrival.

Infected vessels shall be treated as follows:

1. The sick shall be promptly landed and isolated.
2. Other passengers shall be landed, if possible, and subjected to an observation, the duration of which shall depend on the sanitary condition of the vessel and the date of the last case on board, but which shall never exceed five days.
3. Soiled linen and effects of passengers and crew, when declared infected by the port sanitary authority, shall be disinfected, also the vessel itself or the part of the vessel contaminated.

Suspected vessels shall be subject to—

(1) Medical visit; (2) disinfection; (3) emptying of the bilge water and renewal of potable water supply.

Five days' observation of passengers and crew is recommended; also detention of crew on board, except when the service of the vessel requires their presence on shore.

Clean vessels shall be at once admitted to free pratique. The port sanitary authority may apply to them the measures prescribed for suspected vessels, and may demand a certificate to the effect that there was no case of cholera on board at the time of departure. A vessel which shall decline compliance with the requirements of the port authority shall be free to put out to sea. It may land its cargo under the following conditions:

1. Isolation of the vessel, crew, and passengers.
2. Emptying of the bilge water after disinfection.
3. Renewal of potable water supply.

## SANITARY POSTS.

1. At Fao, or its proximity, there should be a large lazaretto on terra firma, with complete sanitary service, having under its direction the sanitary posts of the Persian Gulf.
2. There should also be a small lazaretto on one of the two Ottoman Islands, Salahiye or Yilaniye, situated near Bassorah, to have oversight of persons who may have escaped inspection at Fao.
3. Continuation of the sanitary post now in operation at Bassorah.
4. Establishment of sanitary post in the bay of Koweit, to have oversight of travel from Bahrein, and of the transportation of bodies conveyed by caravan for burial in the holy places of Kerbela.
5. Sanitary post at Menama, capital of the Bahrein Islands, to have oversight of the pearl fisheries.
6. Sanitary post at Bender-Abbas.
7. Sanitary post at Bouchir.
8. Sanitary post at Mohammerah.
9. Sanitary post at Gwodar, in Beloochistan.
10. Sanitary post at Mascate, on the coast of Oman.

*Annex 4.*

## DIRECTIONS.

1. The application of the measures adopted by the conference in regard to the pilgrimages shall be intrusted to a committee chosen from among the members of the council of health of Constantinople. This committee shall be composed of three representatives of Turkey and of the several powers who have accepted the sanitary agreement signed by the conferences of Venice and Dresden. The president of the committee shall be an Ottoman.

2. To secure effective service at the several sanitary stations competent corps of physicians, disinfectors, mechanics, and sanitary guards, recruited from among ex-officers, commissioned and noncommissioned, shall be created.

3. The expense of carrying out the system proposed by the conference shall be divided between the Ottoman Government and the council of Constantinople, according to the scale already fixed by the several powers interested.

4. The sanitary authority at the Ottoman port of arrival or departure shall draw up a statement of any infraction of this agreement, to which the captain of the offending vessel shall attach any explanation he may have to make. A certified copy of this statement shall be transmitted to the consul representing the country to which the vessel belongs. The consul shall require the fine to be placed in his hands. In the absence of the consul the fine shall be deposited with the sanitary authority. The fine shall ultimately go to the council of Constantinople when the consular commission shall have declared it valid. A second certified copy of the statement shall be forwarded to the council of Constantinople, who shall refer it to the consular commission.

5. A consular commission shall be formed at Constantinople to have cognizance of disputed cases, and to act as judge between the sanitary agent and the ships' captains. It shall be elected every year.

6. The taxes and sanitary fines shall not be diverted to any objects but those relating to the sanitary councils.

## QUARANTINE STATIONS.

The island of Camaran is 180 marine leagues distant from the straits of Babel-Mandeb, 45 from Hodeida, 18 from Loheya. Its length is 11 miles; breadth,  $3\frac{1}{2}$ ; altitude, 50 feet. The soil of the island is sandy and pebbly. The water is generally

brackish. The temperature does not exceed 44° C. There are five villages on the island. The retention of Camaran as a quarantine station for pilgrims was opposed in committee on the ground of unsanitary local conditions. It was objected to it that the soil was already infected from cholera excreta, and that in establishing a permanent quarantine station a fresh and perfectly healthy site should be selected. The objections made were overruled and Camaran was retained as a pilgrim quarantine station. The number of pilgrims to be received and treated at any one time was limited to 3,000.

LAZARETTO OF ABOU-SAAD AND VASTA.

This station is situated on two islands bearing these names, in the vicinity of Djeddah. It is intended to receive pilgrims arriving from points north and south of the Red Sea, and is kept open throughout the year, whereas the station at Camaran is in operation only for six months, or during the pilgrimage. These islands are very narrow and can accommodate only 500 persons at any one time. The station was established in 1887.

Surgeon-General Cunningham (British India) made a detailed report in committee against quarantine at the entrance of the Red Sea. He asserted that detention at Camaran was unnecessary, the pilgrims having passed the whole period of the incubation of the disease on board ship and under medical observation. Camaran was made a quarantine station in 1881. Since that date all pilgrim vessels going to Mecca have been obliged to disembark their passengers on the island, even when the vessel had been in good sanitary condition from the time of its departure from India. He drew attention to the fact that detention at Camaran nullifies the precautions taken on board ship and at the port of departure. The careful medical examination before embarkation, the refusal to admit on board any suspected person or article of baggage, and the presence on board the vessel of a physician and a disinfecting store would seem to guarantee favorable sanitary conditions during the voyage. Pilgrims thus started on their journey, and protected during its course, arriving at Camaran after a voyage of twelve or fourteen days, in perfect sanitary condition, are landed on the island and detained under wretched conditions as to food and lodging and during a season of the year when the heat is intolerable to pilgrims from the cooler latitude of northern India. It would be a miracle if cholera or other sickness did not break out among them. He spoke of the system of water supply and the lodging of pilgrims at Camaran as deplorably bad, and stated that quarantine at that point had notoriously failed hitherto to protect the Hedjaz from choleraic outbreak.

The British Indian delegates also formally objected to the five days' observation before embarkation at Indian ports. They stated that the situation of Bombay, which is the principal Indian pilgrim port, made it impossible to construct barracks large enough to accommodate, under hygienic conditions, the number of pilgrims that assemble there. These pilgrims come for the most part from northern India, where the climate is comparatively cool, and to herd them in unsuitable quarters during the hot season for five days would be a violation of hygienic principles. Moreover, many of the pilgrims arrive by railway as ordinary passengers, and present themselves for embarkation on the day of departure of the vessel. A complete system of railway passenger inspection and interrogation would be required to verify each pilgrim.

The consensus of opinion in the committee that considered these objections was in favor of the maintenance of a second line of defense against cholera at the entrance of the Red Sea. It could not be shown that the precautions taken before embarkation and during the voyage were absolutely efficacious, and the enormous increase of cholera in India (700,000 choleraic deaths having been reported in 1892) made it absolutely necessary to prevent any vessel carrying a latent germ of cholera to reach the seaports of the Hedjaz.



At the closing session of the conference, April 3, the delegates of the United States announced that they were prepared to accept the agreement based on the report of the Red Sea commission, with some reservations. They declined to accept the interpretation placed on paragraph 4, Section A, annex 1, which allowed observation of pilgrims on board ship, provided the vessel were furnished with the suitable appliances for disinfection, instead of observation on shore and by groups. They also objected to the proposition to place the control of quarantine and sanitation in the Red Sea in the hands of a committee composed of representatives of the several powers, but excluding therefrom representatives of powers that have not accepted the agreements of the conferences of Venice and Dresden. They claimed that their Government, which was not represented at these conferences, was entitled to a voice in an international committee organized for the protection of the health of Europe and America.

The delegates of Great Britain signed the agreement, but withheld their acceptance of (1) paragraph 5, Section A, annex 1; (2) article 13, annex 1, Section B; (3) annex 3.

The first article relates to the obligation imposed on each pilgrim to show that he possesses the means of defraying the expenses of the pilgrimage. Surgeon-General Cunningham said that the British Government allowed complete religious liberty in all parts of the British possessions, so long as the law of the land was observed. He could, therefore, definitely state that the government of India would never enact a law discriminating against any of its Mussulman subjects.

The second article objected to relates to the space between decks allotted to each pilgrim.

The third objection made was to the annex relating to the Persian Gulf.

The Italian delegates made the same reservations as the British delegates.

The delegate of Germany reserved for his Government all advantages that might result from the reservations made by the British delegates.

The delegates from Greece declared themselves as adopting only those provisions of the agreement which did not conflict with the regulations already in force in Greece.

The delegates of the low countries stated that they were prepared to sign with a reservation in regard to the space allotted each pilgrim, the space and surface fixed by Indo-Dutch regulations appearing to them ample.

The delegate of Norway and Sweden declared that his instructions permitted him to sign only *ad referendum*. He therefore withheld his signature.

The Turkish delegates stated that they signed with reservation of all provisions conflicting with Ottoman sanitary regulations.

The delegates of France, Austria-Hungary, Belgium, Denmark, Spain, Italy, Greece, Portugal, and Russia declared that they reserved for their respective governments all advantages resulting from the reservations made by Great Britain, and of which Germany had claimed the full benefit.

The president then expressed for the conference the following:

1. Supervision of the pilgrim caravans going by land to Mecca and Medina. It is the earnest wish of the conference that the measures taken along the routes of land travel in the East may be in accordance with the principles adopted by the conferences of Venice and Dresden, and that long land quarantines may be replaced by the modern methods of disinfection.

2. Protection of Persia. The conference earnestly hopes that sanitary measures conformed to those formulated by the conferences of Venice, Dresden, and Paris may be adopted on the Persian frontiers.

3. Acceptance of the agreements of the conferences of Venice and Dresden.

The delegates of Germany, Austria-Hungary, Belgium, France, Great Britain, Italy, the Netherlands, and Russia express the hope that the powers that have not accepted the sanitary agreements signed at Venice and Dresden will hereafter accept the said agreements.

The conference was formally adjourned April 3, 1894.

## YELLOW FEVER.

The year 1894 has not shown unusual development of yellow fever outside of its normal zone. The United States has escaped entirely any recrudescence of the late epidemic in Georgia, reported in previous annual report. In Brazil, the city of Rio de Janeiro, and in Cuba, the cities of Havana, Cardenas, Matanzas, and Santiago de Cuba report several hundred cases. Puerto Rico (West Indies) and San Salvador (Salvador) also report 184 and 193 cases, respectively, the latter with mortality above 50 per cent. The following table shows its distribution as reported to the Bureau between April 26 and November 30, 1894:

Places.	Date.	Cases.	Deaths.	Remarks.
<b>Brazil:</b>				
Rio de Janeiro.....	Apr. 29-Sept. 15.....		438	
	Oct. 13-20.....		1	
Santos.....	Oct. 6-13.....	2		
<b>Cuba:</b>				
Cardenas.....	July 1-Sept. 15.....	158	28	
Cienfuegos.....	Apr. 29-Oct. 29.....	40	58	
Cruces City.....	Aug. 1.....			Fever reported.
Guantanamo.....	June 1-Aug. 31.....	12	11	
Havana.....	Apr. 27-Nov. 22.....	832	316	
	Nov. 22-Dec. 6.....	32	12	
Manzanillo.....	July 1-Aug. 31.....	4	2	
Manzanaragua.....	Aug. 1.....			Yellow fever reported.
Matanzas.....	June 20-Oct. 17.....	100	26	
	Nov. 1-7.....	5	2	
Sagua la Grande.....	July 1-7.....		1	
Santiago de Cuba.....	Apr. 26-Oct. 27.....	102	29	
	Oct. 28-Nov. 10.....	11	5	
<b>Ecuador:</b>				
Guayaquil.....	May 4-10.....		3	
<b>Honduras:</b>				
Nacaome.....	Apr. 8-28.....		5	
<b>Mexico:</b>				
Laguna.....	Sept. 13.....			Do.
Vera Cruz.....	Apr. 27-Oct. 18.....		197	
	Nov. 1-8.....		2	
	Nov. 15-22.....		1	
<b>Nicaragua:</b>				
Granada.....	Sept. 14.....			Yellow fever reported to be epidemic.
Managua.....	do.....			
<b>Panama:</b>				
Panama.....	Sept. 13.....	1		Yellow fever reported. (Infection at Guayaquil.)
<b>Salvador:</b>				
La Libertad.....	Aug. 3.....			Yellow fever reported.
San Salvador.....	July 14-Aug. 25.....	26	15	
	Sept. 10-30.....		49	
	Oct. 24-Nov. 8.....	167	94	
<b>West Indies:</b>				
Antigua.....	Apr. 29-May 5.....	1	1	
Puerto Rico (San Juan).....	June 4-Sept. 6.....	184	29	Confined to barracks. Fever not among shipping.
Port of Spain (Trinidad).....	Nov. 1-14.....		2	
	July.....		1	
<b>Yucatan:</b>				
Merida.....	May 25-31.....		1	
<b>Venezuela:</b>				
Betizogne.....	Nov. 6.....			Yellow fever reported.
Maracaibo.....	Sept. 15-29.....	7	1	
	Nov. 17-24.....	1	1	

At the meeting of the International Congress of Hygiene and Demography, which was opened September 2, 1894, Dr. Charles Finlay, of Havana, in a paper on yellow-fever infection, expressed the opinion that partial or total immunity from yellow fever probably results from

even the mildest yellow-fever infection. A succession of mild attacks appears not infrequently to endow the person thus affected with total immunity. The adult natives of Havana probably owe their immunity to the effect of slight attacks of yellow fever in childhood. Dr. Finley alludes to the theory which attributes the spread of yellow fever to mosquito bites, and states that in the course of thirteen years ninety persons were shown to have been inoculated with yellow fever by mosquitoes.

**SPECIAL PRECAUTIONS ADOPTED BY THE BUREAU TO PREVENT THE INTRODUCTION OF YELLOW FEVER IN 1894.**

Notwithstanding the careful post-epidemic disinfection that was carried on by the Bureau in Brunswick and in Jesup in the fall of 1893, some apprehension existed as to a recurrence of the fever in those cities during the succeeding summer of 1894. In order that the Bureau might be promptly informed of any suspicious case, overtures were made to the city of Brunswick for the stationing of a medical officer of the Marine-Hospital Service in that city in order to make prompt report of the appearance of any suspicious case. The following correspondence explains itself. No suspicious case occurred:

**SANITARY INSPECTION OF THE CITY OF BRUNSWICK AND INSPECTION OF LOCAL QUARANTINES ON THE SOUTH ATLANTIC AND GULF COASTS.**

OFFICE OF THE SUPERVISING SURGEON-GENERAL,  
MARINE-HOSPITAL SERVICE,

*Washington, D. C., April 27, 1894.*

SIR: Referring to the epidemic of yellow fever in Brunswick last season, I beg to invite your attention to the fears of a possible recurrence of the disease during the coming summer and to the necessity of making provision for the prompt discovery of any case occurring in either Brunswick or other city on the South Atlantic or Gulf coast. For this purpose it is my intention, with your approval, to detail Surgeon Murray, whose treatment of yellow fever in Brunswick last season has given him the confidence of that community, and Dr. John Guitéras, who is an acknowledged expert in determining doubtful cases, for duty in Brunswick and other cities. It is proposed to keep Surgeon Murray in Brunswick most of the time, and to assign to Dr. Guitéras the duty of examining the mortuary records of the several Southern cities, with a view to ascertaining any unusual mortality from fever, which is usually a forerunner of an epidemic of yellow fever. He will also be directed to pass upon suspicious cases when reported. Dr. Guitéras is professor of pathology in the University of Pennsylvania, was formerly a regular officer of this Service, was employed as sanitary inspector, and rendered invaluable aid in Brunswick last season.

In view of the severe epidemic of yellow fever in Rio de Janeiro during the past winter, and its presence as usual in Havana and elsewhere, unusual precautions should be taken during the coming season to prevent its introduction into the United States. To this end I consider it necessary to have frequent inspections made of local quarantines on the South Atlantic and Gulf coasts, and shall detail P. A. Surg. J. H. White, now stationed at Savannah, to inspect quarantines on the North and South Carolina and Georgia coasts; Surgeon Murray to inspect a portion of the

Florida coast in addition to his duties in Brunswick; Assistant Surgeon Eager, on duty at Key West, to inspect the local quarantine there; Surg. W. H. H. Hutton to inspect the local quarantines on the Gulf coast from the eastern boundary of Louisiana to and including Apalachicola, Fla.; Surg. J. M. Gassaway, located at New Orleans, to inspect the local quarantines of Louisiana and Texas.

These inspectors, besides assuring the Department that the regulations are being complied with, will aid also in securing prompt information of appearance of infected vessels at the quarantines and of suspicious cases in the several localities, and will, I believe, cause a degree of confidence in the sections liable to be visited by yellow fever.

I have the honor to remain, very respectfully, yours,

WALTER WYMAN,

*Supervising Surgeon-General, Marine-Hospital Service.*

To the SECRETARY OF THE TREASURY.

OFFICE BOARD OF HEALTH,  
*Brunswick, Ga., May 2, 1894.*

DEAR SIR: At the meeting of the board of health of our city it was unanimously voted that the chairman communicate with you relative to sending an expert here during the season of possible outbreak of yellow fever this summer from any germ which may have hibernated from last year's epidemic. \* \* \* Our board is in full sympathy with this Service and willing to have its concert assistance in all sanitary matters locally and pertaining to the country at large. In view of the above facts, the board requests me to say a rigid watch and inspection will be kept upon every department of our sanitary environment, and as you have already competent representatives in the sanitary inspector at quarantine and myself, as your acting assistant surgeon, with all experience in diagnosis of yellow fever in three epidemics, you can have the assurance of prompt and reliable reports from this port of any suspicious cases of fever or other epidemic and infectious diseases. Our city is just completing 6 miles of sewerage and subsoil drainage, including the infected area of last summer's infection, and our sanitary corps are energetically cleaning up the city. The outlook from present standpoint is most encouraging, and while there may be a few sporadic cases of yellow fever, I seriously doubt any possibility of its spread or an epidemic.

In conclusion, should you still desire further representation in the person of an additional inspector, this board will cheerfully extend its cooperation, assuring you of our appreciation and gratitude for the valuable aid of the Marine-Hospital Service during the past epidemic.

I have the honor to remain, very truly and respectfully yours,

HUGH BURFORD, M. D.,  
*President Board of Health.*

SURGEON-GENERAL, MARINE-HOSPITAL SERVICE.

OFFICE SUPERVISING SURGEON-GENERAL,  
MARINE-HOSPITAL SERVICE,  
*Washington D. C., May 7, 1894.*

DEAR SIR: I am in receipt of your letter of the 2d instant, communicating the expression of your board concerning the sending of an expert during the coming season.

I can not refrain from congratulating the board upon the vigorous measures which have been taken during the winter season with regard to sewerage, subsoil drainage, and other sanitary measures. I had been previously informed of the energy displayed by the city of Brunswick in taking means to prevent a return of the yellow fever, and while, as you intimate, it may prove to have been entirely unnecessary to have an expert on the grounds during the coming season, still I believe the fact

that one is stationed there, and that, too, with the ready acquiescence of your board, will be of practical benefit to the city. Surgeon Murray has been detailed for the purpose, and will have with him, from time to time, Dr. John Guitéras. The latter's duties will also include observations in other parts of the South.

Permit me, in closing, to express my appreciation of your assurance of cheerful cooperation, and your kind expressions regarding the aid of the Marine-Hospital Service during the past epidemic.

Respectfully, yours,

WALTER WYMAN,

*Supervising Surgeon-General, Marine-Hospital Service.*

Dr. HUGH BURFORD,

*President Board of Health, Brunswick, Ga.*

Particular attention was paid to the entire South Atlantic and Gulf coasts. From Wilmington, N. C., to Brownsville, Tex., during the yellow-fever season the coast was under almost constant patrol by officers of this Service, inspecting local quarantines and reporting upon such deficiencies as were found to exist.

For the purpose of inducing shipmasters coming from infected countries with yellow fever or suspected yellow fever on board their vessels to at once repair to the outlying refuge stations of the Marine-Hospital Service, the following letter was addressed to the Secretary of State, who in turn made the desired request of the consuls in South and Central American, Mexican, and West Indian ports. As a result, a much larger number of vessels than usual were received at the Dry Tortugas Quarantine Station.

TREASURY DEPARTMENT,

*Washington, May 5, 1894.*

SIR: I have the honor to request that the United States consuls stationed in the Atlantic seaports of South America, Central America, and Mexico, and in all West Indian ports, particularly ports in Cuba, be instructed to notify masters of vessels leaving said ports for any port in the United States between the southern boundary of Virginia and the western extremity of the Mississippi coast, to the following effect, namely: That if yellow fever, or fever that is suspected of being yellow fever, appears on board any such vessel during the voyage, or if the master has reason to believe during the voyage that the vessel is infected with yellow fever, said vessel en route to her port of destination should repair to the United States quarantine station at Dry Tortugas, Fla., or, if more convenient, to the United States quarantine station at Blackbeard Island, Sapelo Sound, Georgia, for inspection or treatment. This procedure will be likely to save the vessel both time and expense. No quarantine fees are charged at the national quarantine stations.

I have further to request that the following additional instructions be transmitted to the United States consuls in all Cuban and other West Indian ports, namely: Masters of sailing vessels from Cuban ports in which yellow fever prevails, and from other West Indian ports in which yellow fever may prevail, bound for any port in the United States south of the southern boundary of Virginia, should be advised during the quarantine season, between May 1 and November 15, to proceed via the United States quarantine station at Dry Tortugas, Fla., or the United States quarantine station at Blackbeard Island, Sapelo Sound, Georgia, for inspection or treatment.

I have the honor to remain, very respectfully, yours,

W. E. CURTIS, *Acting Secretary.*

The SECRETARY OF STATE.

INSPECTION OF THE MORTALITY RECORDS OF SOUTHERN CITIES  
DURING THE SEASON.

In order that the Bureau might be informed of the presence of suspicious cases in any one of the Southern seaboard cities, Dr. John Guitéras was appointed sanitary inspector to visit said cities and make report. Following are his instructions:

TREASURY DEPARTMENT,  
OFFICE OF THE SUPERVISING SURGEON-GENERAL,  
MARINE-HOSPITAL SERVICE,  
*Washington, D. C., May 29, 1894.*

SIR: Having arrived in Washington, as per order, you are directed to proceed without delay to Wilmington, N. C., for the purpose of beginning the investigation hereinafter mentioned. You are ordered to visit the seaport cities of the Southern States that are exposed to the introduction of yellow fever, with a view to studying the diseases that usually give rise to questions of diagnosis with yellow fever in the beginning of epidemics.

You will further make a study of the death rate in the said seaports, comparing the records of previous epidemics with recent years of exemption, in order to obtain data concerning the morbidity and mortality of the preepidemic period that may be of value in giving early notice of the presence of the disease.

You are informed that access to the various records of the different cities may be had only through the permission of the State or municipal officer, and you are directed to put yourself in communication with the proper authorities, and ask permission for prosecuting the said work, showing, if need be, this letter for the purpose specified.

Any important facts or deductions therefrom which may be elicited by your labors you will consider confidential, excepting that you may communicate the same to the proper State or local authorities, on request.

You will report by letter to the Bureau at least once each week, giving a brief statement of the progress of your work and keeping the Bureau accurately informed of your address.

Your duties further will be to respond to orders to investigate cases of fever that are suspected of being yellow fever. Should reports of such cases reach you, notify the Bureau immediately and investigate without delay, placing yourself in accord with the local authorities.

You will make a full report to the Bureau on termination of this detail for publication.

Respectfully, yours,

WALTER WYMAN,  
*Supervising Surgeon-General Marine-Hospital Service.*

Dr. JOHN GUITÉRAS,  
*Sanitary Inspector, Marine-Hospital Service, Washington, D. C.*

The method of Dr. Guitéras of determining the probability of yellow fever existing in a given city is set forth in the following article, which, though prepared for presentation before the American Public Health Association, is pertinent to the subject under consideration, and is herewith embodied in full:

## PREVENTION OF THE SPREAD OF YELLOW FEVER.\*

[By Walter Wyman, Surgeon-General Marine-Hospital Service.]

One of the prime factors in the prevention of the spread of yellow fever is an early knowledge of its existence. A study of the history of nearly all epidemics will show that the disease has gained considerable headway before its existence has been admitted or publicly announced. The reasons for this are obvious. Often there is a genuine doubt in the mind of the practitioner, and the ability to accurately and positively diagnose yellow fever is not possessed by every physician. When in serious doubt, the fear of raising alarm, with all the consequent damage to the commerce of the city or town, induces the practitioner to hold his peace; or he may absolutely conceal the cases, when known, in the hope that they may prove sporadic.

For example, during the examinations which were made of the mortuary records of Brunswick, Ga., in connection with the yellow fever epidemic there in 1893, it was demonstrated, by a process of reasoning to be explained further on, that yellow fever had prevailed in Brunswick in 1890, and had been kept concealed. Not only did the mortuary records show this, though the cases were not diagnosed as yellow fever, but evidence of creditable citizens has been obtained to this effect; and reliable testimony, that one of the physicians of Brunswick had made the statement in the fall of 1890, that yellow fever was prevalent—almost epidemic—and “if the Lord did not send a frost soon, it would be impossible for them longer to conceal it.” It is known now that yellow fever had existed last year a month prior to the death of Assistant Surgeon Branham and prior to its being declared epidemic.

It is evidently, therefore, of the highest importance that, when suspicious cases are announced, they should be passed upon by some well-known expert, whose decision will be accepted as final, and who is free from all local influence. Acting upon this theory, the Marine-Hospital Service does not hesitate to send immediately an expert to any locality suspected of being infected with yellow fever. One who can proclaim the disease if it exists, without bringing upon himself the anathemas of friends, associates, and city authorities, and the ruin of his professional prospects.

A new method of determining the presence of yellow fever, in some cases with positive accuracy, has been announced by Dr. John Guit  ras, professor of pathology in the University of Pennsylvania, and at present sanitary inspector of the Marine-Hospital Service. I can best explain his theory by reading his letter to me upon the subject:

PHILADELPHIA, PA., *September 18, 1894.*

SIR: According to promise, I give you in brief the practical application of the studies I have made of the death rate in relation to yellow fever.

I have frequently found peculiar features of the mortality immediately preceding the acknowledgment of the presence of an epidemic of yellow fever. When these features are sufficiently pronounced, they enable a careful student—

1. To announce, without fear of contradiction, the existence of a commencing epidemic of yellow fever, when, perhaps, it is denied on the ground of carelessly observed clinical data.

2. To point out the existence and the date of beginning and ending of outbreaks in past years, which outbreaks had not been generally, if at all, recognized.

3. The student is further enabled to allay excitement, and silence false and damaging rumors as to the existence of yellow fever in a locality. He may even foretell, with some degree of certainty, that an epidemic of yellow fever is not likely to arise within the city and season, subject to his observation

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\* Presented at the Montreal meeting of the American Medical Association, September 25-28, 1894.

These accomplishments, theoretically, all amount to the same thing, namely, the finding of yellow fever through other than bedside observations; but I thus separate them, because, practically, they deal with queries that present themselves to the so-called yellow-fever expert as distinct problems of great importance.

The peculiar features of the mortality upon which the solution of the above problem is based are an unusual preponderance of deaths in the white population in general, and especially of white children, and natives of the northern section of the country and Europe. The causes of death that are found to account for this increase of the white mortality are acute cerebral and gastro-enteric affections of children and, above all, acute manifestations of malaria.

This means, in my opinion, that errors of diagnosis are made in the early stages of the epidemic and that frequently the case which is supposed to be the starting point of an outbreak is not the first case of yellow fever occurring in that particular epidemic. Isolated cases have developed in the earlier portion of the summer and, I believe, not rarely are the result of importation that has taken place toward the end of the preceding season or during the winter or spring.

The errors of diagnosis between the yellow and the malarial fevers will be the subject of a special report. Much of what was written along our Atlantic border concerning the malarial fevers in the earlier days of the American school of medicine shows the frequency of these errors. The bilious remittent fever was frequently yellow fever. The former disease gradually disappeared with the retreat of yellow fever toward its tropical home.

Yours, very truly,

JOHN GUITÉRAS.

Dr. WALTER WYMAN,

*Surgeon-General Marine-Hospital Service.*

Acting upon the theory advanced in this letter and with a strong determination to promptly prevent the spread of yellow fever during the present season, as early as July of the present year Dr. Guitéras was ordered to visit the various coast cities of the South from Baltimore to Mobile and to examine the mortuary records thereof, and to promptly report to the Marine-Hospital Bureau any suspicion of yellow fever in any of the cities resulting from said investigation. He has just concluded his examination of the mortuary records of the cities of Baltimore, Norfolk, Wilmington, Charleston, Savannah, Jacksonville, Key West, Tampa, and Mobile. In none of these records has he found any suspicion of the existence of yellow fever at this season.

The following blank form has been provided to be filled out at stated intervals by the Marine-Hospital officers stationed in these various cities, which will in future give the Bureau the desired information and call attention to any possible danger, as shown by said records:





	Premature.	Stillborn.	Malformations.	Debility.	Senility.	Other diseases not specified.
14. Pyæmia.....						
15. Dysentery.....						
16. Trianus.....						
17. Other forms of tetanus.						
18. Tuberculosis.....						
19. Syphilis.....						
20. Other infections.....						
21. Acute gastro-enteric affections.						
22. Chronic gastro-enteric affections.						
23. Infantile wasting diseases.						
24. Liver.....						
25. Liver.....						
26. Aræmia.....						
27. Bronchitis, acute.....						
28. Bronchitis, chronic.....						
29. Congestion of lungs.....						
30. Lungs.....						
31. Pleura.....						
32. Meningitis.....						
33. Cerebral congestion of children.						
34. Teething.....						
35. Infantile eclampsia.....						
36. Heart disease.....						
37. Cardio-vascular sclerosis.						
38. Cardio-vascular sclerosis.						
39. Apoplexy, cerebral.....						



**MARINE-HOSPITAL SERVICE.**

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[Indorsement.]

Form No. 1934c.

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U. S. Marine-Hospital Service.

*Port of*.....  
....., 189 .

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**MONTHLY MORTALITY STATISTICS**

**FOR THE**

*Port of*.....

*Month of* ....., 189 .

....., *Surgeon, M. H. S.*

## DIRECTIONS FOR USING BLANK.

## NATIVITY.

Column *a* includes the natives of the city furnishing the report.

Column *b* includes the natives of the zone of occasional yellow fever epidemics, namely: The Southern sea-border States, from Virginia to Texas, Mexico, Central America, Colombia, Venezuela, West Indies, and the western coast of tropical Africa.

Column *c* includes the natives of other States and countries where yellow fever has never occurred, or, if it has, only in the shape of accidental outbreaks.

Column *d*, nativity not given.

## DISEASES.

1 *Acute malaria*.—The deaths given in this line should be repeated in detail in the last column (malarial diseases in detail), under specific headings, e. g., congestive chill, bilious remittent fever, etc.

2. *Fevers, unclassified*.—The name of the fever should be written, e. g., gastric fever.

8. *Other fevers*.—The name of the fever should be written, e. g., variola.

14. *Pyæmias*.—Under this heading should be reported puerperal fever, carbuncle, abscess.

20. *Other infections*.—The name of the disease should be written, e. g., cholera, glanders, rabies.

21. *Acute gastro-enteric affections*.—Includes gastritis, enteritis colitis, entero-colitis when not specified as chronic, and other evidently acute diseases, e. g., cholera morbus and cholera infantum.

24 and 25. *Liver*.—The particular disease of the liver to be written, e. g., cirrhosis, abscess.

37 and 38. *Cardio-vascular sclerosis*.—The particular manifestation of cardio-vascular sclerosis to be written out, e. g., cerebral softening, aneurism, senile gangrene, angina pectoris.

40. *Paralysis*.—Includes hemiplegia.

*Other diseases not specified*.—This includes only such cases as have not been included in the general table. The cause of death should be written, and a stroke, thus, /, made for any death of a white person, and a crossed stroke, thus, ×, for every colored person. The nativity, *a*, *b*, *c*, or *d*, should be written above the stroke and the age below; for instance:

	<i>a</i>	<i>b</i>
Purpura	/	×
	35	20
	<i>c</i>	<i>b</i>
Locomotor ataxia	/	×
	42	50

*Races*.—In the general table of diseases the same signs should be used to distinguish the races; a single stroke, /, for white, and a crossed stroke, ×, for colored, each in the respective spaces above and below the dotted lines.

Experience proves that when the existence of yellow fever is suspected reliance can not be placed upon the reports of physicians, and a house-to-house inspection, therefore, should be made under municipal or State authority.

A knowledge of the existence of the disease having been obtained, the first efforts should be made to confine it to its present locality. Much has been written of the futility of attempting to stamp out yellow fever. In view of the fact, however, that most epidemics have become well-established before being announced and before any steps have been taken to suppress them, the futility of these efforts should not deter us from attempting to check the disease after the presence of a limited number of cases. If, for example, a few cases have been found, and examination of the records shows that in all probability the disease had not previously existed before these

cases were discovered, there would be reasonable ground for hope of preventing its further spread by active local quarantine measures. These may be stated briefly as follows, viz: An early house-to-house inspection; the depopulation of the house or infected area, care being taken to disinfect the clothing of exposed persons, the non-immunes leaving the infected area to be kept under observation, and if possible in a place set aside for this special purpose; house or district quarantine; a thorough disinfection by sulphur fumes and bichloride of mercury of the infected places and their contents. At this time the facts as they exist should be made public, with a view of allowing those who wish to leave the city to do so. Depopulation of the city at the very first appearance of yellow fever, which in all probability will become epidemic, is greatly to be desired, but under restrictions hereinafter mentioned.

In the infected district the cases, if possible, should be concentrated into central hospitals to diminish the number of foci of infection and to insure ease of administration. Tent hospitals, it is believed, furnish sufficient protection.

Experience has shown that nurses should be under close surveillance.

Sanitary guards should be chosen, if possible, from among people whose residence is remote from the epidemic, since they will be less likely to be influenced by considerations of kindred, friendship, or local affiliation.

With regard to railroads, rival roads should be closely watched.

The medical officer in command should confine himself to administrative duties, except under unusual circumstances.

As soon as the disease has become epidemic, consideration for the surrounding country takes precedence over the comfort and commercial interests of those within the infected area; a strong cordon by land and by sea is to be drawn, military in character, and egress from the city thereafter allowed only through a detention camp, where those leaving the city must be forced to undergo a period of probation of ten days to demonstrate their freedom from the disease.

Following are the regulations which were promulgated by the Secretary of the Treasury, August 12, under the act of February 15, 1893, to prevent the spread of yellow fever:

UNITED STATES QUARANTINE RULES TO BE OBSERVED IN PLACES INFECTED WITH  
YELLOW FEVER.

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,  
*Washington, D. C., August 12, 1893.*

*To medical officers of the Marine-Hospital Service, quarantine officers in the United States, and others concerned:*

Pursuant to the act of February 15, 1893, entitled "An act granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service," the following regulations have been made thereunder and are hereby promulgated according to the terms of the act:

1. All persons affected with yellow fever, or who are believed to have been exposed to the infection, will be isolated under observation until free from infection and all their effects properly disinfected. Communications with infected places will not be allowed except for the necessary conveyance of supplies, etc., which must be under the supervision of a duly qualified medical sanitary inspector.

2. The localities contiguous to those infected, and infected localities, so far as it may be safely done, should be depopulated as rapidly and as completely as possible; persons from noninfected localities, and who have not been exposed, leaving without detention; those who have been exposed, or who come from infected localities, being required to undergo a period of detention of ten days from date of last exposure in camps of probation. The clothing or anything capable of conveying infection shall not be allowed to leave the infected locality without disinfection.

3. Camps of probation shall be inspected twice daily or oftener, and the suspects should be conveniently segregated in groups. A hospital sufficiently isolated shall be provided for each probation camp.

4. When practicable, camps of detention should be provided for those who require it.

5. Buildings in which cases of yellow fever have occurred, and localities believed to be infected, must be disinfected as thoroughly as possible.

6. As soon as the disease shall have been declared epidemic, the railway trains carrying persons who may be allowed to depart from a city or place infected with yellow fever shall be under medical supervision. A medical sanitary inspector should accompany each train when practicable, and enforce prompt isolation of any person who may be attacked with the disease, and report the same immediately to the proper health authorities. When, in the opinion of the proper health authorities, it is necessary, the railroad companies should be required to attach an extra car for hospital purposes to each train carrying persons from an infected place, which may be side tracked at some safe and convenient locality on the road.

CHARLES S. HAMLIN, *Acting Secretary*.

It will be opportune here to read from the more recent regulations which have been prepared in the Marine-Hospital Bureau and promulgated by the Secretary of the Treasury to prevent the spread of certain diseases, viz, cholera, yellow fever, small-pox, typhus fever, leprosy, and plague. The portions of these regulations applying to yellow fever are given here in detail:

## ARTICLE II.

### NOTIFICATION.

1. State and municipal health officers should immediately notify the Supervising Surgeon-General of the United States Marine-Hospital Service by telegraph or by letter of the existence of any of the above-mentioned quarantinable diseases in their respective States or localities.

## ARTICLE III.

### GENERAL REGULATIONS.

1. Persons suffering from a quarantinable disease shall be isolated until no longer capable of transmitting the disease to others. Persons exposed to the infection of a quarantinable disease shall be isolated, under observation, for such a period of time as may be necessary to demonstrate their freedom from the disease.

All articles pertaining to such persons liable to convey infection shall be disinfected as hereinafter provided.

2. The apartments occupied by persons suffering from quarantinable disease, and adjoining apartments when deemed infected, together with articles therein, shall be disinfected upon the termination of the disease.

3. Communication shall not be held with the above-named persons and apartments, except under the direction of a duly qualified officer.

4. All cases of quarantinable disease, and all cases suspected of belonging to this class, shall be at once reported by the physician in attendance to the proper authorities.

5. No common carrier shall accept for transportation any person suffering with a quarantinable disease, nor any infected article of clothing, bedding, or personal property.

The body of any person who has died of a quarantinable disease shall not be transported, save in hermetically-sealed coffins, and by the order of the State or local health officer.

## ARTICLE IV.

## YELLOW FEVER.

In addition to the foregoing regulations the following special provisions are made with regard to the prevention of the introduction and spread of yellow fever:

1. Localities infected with yellow fever, and localities contiguous thereto, should be depopulated as rapidly and as completely as possible, so far as the same can be safely done; persons from noninfected localities, and who have not been exposed to infection, being allowed to leave without detention. Those who have been exposed, or who come from infected localities, shall be required to undergo a period of detention and observation of ten days from the date of last exposure in a camp of probation or other designated place.

Clothing and other articles capable of conveying infection shall not be transported to noninfected localities without disinfection.

2. Persons who have been exposed may be permitted to proceed without detention to localities incapable of becoming infected and whose authorities are willing to receive them and after arrangements have been perfected to the satisfaction of the proper health officer for their detention in said localities for a period of ten days.

3. The suspects who are isolated under the provisions of paragraph 1, Article III, shall be kept free from all possibility of infection.

4. So far as possible, the sick should be removed to a central location for treatment.

5. Buildings in which yellow fever has occurred and localities believed to be infected with said disease must be disinfected as thoroughly as possible.

6. As soon as the disease becomes epidemic the railroad trains carrying persons allowed to depart from a city or place infected with yellow fever shall be under medical supervision.

7. Common carriers from the infected districts, or believed to be carrying persons and effects capable of conveying infection, shall be subject to a sanitary inspection, and such persons and effects shall not be allowed to proceed, except as provided for by paragraph 2.

8. At the close of an epidemic the houses where sickness has occurred and the contents of the same and houses and contents that are presumably infected shall be disinfected as hereinafter prescribed.

## ARTICLE V.

## DISINFECTION FOR YELLOW FEVER.

1. Apartments infected by occupancy of patients sick with yellow fever shall be disinfected by one or more of the following methods:

(a) By thorough washing with an acid solution of bichloride of mercury (bichloride of mercury 1 part, hydrochloric acid 2 parts, water 1,000 parts) or other efficient germicidal agent. If apprehension is felt as to the poisonous effects of the mercury, the surfaces may, after two hours, be washed with clear water.

(b) Thorough washing with a 5 per cent solution of pure carbolic acid.

(c) By sulphur dioxide, twenty-four to forty-eight hours' exposure, the apartments to be rendered as air-tight as possible.

2. Bedding, wearing apparel, carpets, hangings, and draperies infected with yellow fever shall be disinfected by one of the following methods:

(a) By exposure to steam at a temperature of 100° to 102° C. for thirty minutes after such temperature is reached.

(b) By boiling for fifteen minutes, all articles to be completely submerged.

(c) By thorough saturation in a solution of bichloride of mercury, 1 to 1,000, the articles being allowed to dry before washing.



Articles injured by steam (rubber, leather, containers, etc.), to the disinfection of which steam is inapplicable, shall be disinfected by thoroughly wetting all surfaces with (a) a solution of bichloride of mercury, 1 to 800, or (b) a 5 per cent solution of carbolic acid, the articles being allowed to dry in the open air prior to being washed with water, or (c) by exposure to sulphur fumigation in an apartment air-tight, or as nearly so as possible.

A new feature in the management of an epidemic of yellow fever was demonstrated during the recent epidemic in Brunswick, viz, the stationing of a medical officer in command of the districts outside of the cordon lines and detention camp. The officer in command on the field of action must necessarily be at the center to attend to the guards, to supervise the treatment of the sick, the disinfection of clothing and buildings, and other necessary measures of sanitation. His work may be well supplemented by an officer in command of measures to be taken outside, with the triple object of pursuing and returning any refugee who may have escaped the cordon lines; of investigating rumors, which are always rife, of the spread of the disease in other localities, and taking measures to prevent people from the infected or suspected districts traveling upon the railroads, unless provided with a proper certificate, showing that there is no danger of their carrying infection with them.

I know of no easier way of fully describing the methods to be taken to prevent the spread of yellow fever than by giving a short narrative of the measures which were put into operation in and around Brunswick during the yellow fever epidemic in 1893.

#### YELLOW FEVER ON SATILLA RIVER AND AT BRUNSWICK IN 1893.

June 15, 1893, the American barkentine *Anita Berwind*, from Havana, arrived at Brunswick (Ga.) Quarantine. She cleared June 19 for Conquest's wharf, on the Satilla River, Georgia, 56 miles from Brunswick, arriving there on the 20th, on the evening of which day the master took to his bed. On June 21 he was moved to Conquest's camp, a cross-tie camp 8 miles distant from the wharf, where he died, June 25, of yellow fever. The vessel was immediately sent to the national quarantine station at Blackbeard Island, and twenty-five stevedores who had been loading her were also sent there for detention and observation. Surg. H. R. Carter was immediately sent to Conquest's camp with authority to employ guards, nurses, and physicians, and, with the voluntary assistance of Dr. W. F. Brunner, took every possible precaution to prevent the spread of the disease, keeping the seventy-three persons in the camp under a close observation, burning and boiling all the possibly infected articles, and disinfecting the house wherein the patient died.

The following are extracts from his reports, dated July 1 and 3:

"JULY 1.

"There are seventy-three persons in the camp, living in small houses scattered through the brush. The nurses and others directly exposed are isolated separately, and all others are under surveillance, being inspected twice a day by myself. One man who was directly exposed to contagion ran away before I reached here, but I have, I believe, located him, and have sent the constable after him.

"Dr. Brunner (to whose help I owe much) and I burned and boiled nearly all of the possibly infected articles yesterday, and will finish to-day. I have sent to Brunswick for disinfectants, and I will disinfect the house, etc., when they arrive. The house is open, unoccupied, and under guard. There is considerable difficulty in managing the personnel of the camp, or rather it is a matter of some delicacy, as they frankly said that had they known we were coming they would have run off, and it is only by making it to their interest to stay here that I can hold them.

"I authorized the issue of a ration to the families (eight in number) of the stevedores taken to Sapelo. They were absolutely destitute, and as it was necessary to keep them under surveillance, there was no other way. They were in full communication with the stevedores during the six days of loading. I engaged Dr. McKinnon

to inspect them every day. I can not do this, as they are scattered over a radius of about 8 miles, and the nearest one is 10 miles off from here. Any sickness among them will be reported to me.

"Dr. Atkinson will help me here after to-day; he having also been exposed, it seemed well to keep him under surveillance. The probability is that I shall be here about fourteen days if there are no new cases. I confess, however, that I regard it as not at all unlikely that we may have others. Other cases will not materially complicate matters if they occur among those whom I have in close isolation."

"JULY 3.

"No new cases of fever so far. Yesterday I brought back the suspect who had left camp the day before my arrival, as the constable failed to do so. He is now in camp. The disinfectants arrived yesterday, and to-day I am treating the house with sulphur dioxide. It is too open, in spite of calking, to do a very satisfactory disinfection by this means, but I have used the gas in excess threefold. Will use the bichloride solution to-morrow. All fabrics have been burned or boiled, as their condition required.

"I have been hauling lightwood and piling it all over the wood pile and trash heaps in the yard of the house, and I will burn it off this afternoon. I would have done this before, but it was too wet. The object is to burn off all vegetable matter down to the sand, which it will do. I have already burned large fires over the places where the excreta were thrown, keeping them up eight or nine hours. Dr. Brunner left for Savannah yesterday at 4 a. m."

Owing to the thoroughness of the above measures, there was no development of the fever in the camp or at the wharf.

The captain of the *Anita Berwind*, who died at Conquest's camp, was said to have been feeling ill before leaving Brunswick Quarantine, and was known to have visited the city. This led to an inspection of the Brunswick Quarantine by Surgeon Carter, by which it was shown that there was gross violation, not only of the United States Quarantine Regulations, but of ordinary quarantine principles.

Acting upon the information thus received, the National Government took charge of the Brunswick Quarantine under the act of February 15, 1893, and Asst. Surg. J. W. Branham, Marine-Hospital Service, was placed in command.

Dr. Branham took charge of the quarantine July 31, and died August 20. Under a misapprehension of the nature of his disease, he had been removed by the health officer of Brunswick from the quarantine to the city for treatment. From the reports of the medical officers subsequently assigned to duty in Brunswick it appears that there were a number of infected localities in Brunswick at about the same time, and the evidence does not warrant the assumption that Dr. Branham introduced yellow fever into the city.

In Surgeon Murray's report, it is shown that he may possibly have contracted the disease from the ballast pile at the quarantine station, but at the same time the colored laborers engaged in discharging ballast at the quarantine (21 in all) had free access to the city, and it was through them and not through Dr. Branham that the disease was probably introduced and generally disseminated. Dr. Branham was in the city on the 10th of August; in the afternoon returned to quarantine; on his way to the station was seized with a chill, which was followed the next day by a fever; was removed on the 11th to the city, and on the 12th was reported as suffering from yellow fever.

Surg. W. H. H. Hutton was immediately ordered from Norfolk to Brunswick, arriving there on the evening of August 14; and Surg. H. R. Carter, who was at Pensacola, was also ordered there, arriving on the morning of the 15th.

Dr. Branham did not see a single yellow-fever case, nor did he inspect a single infected vessel. It is remarkable that yellow fever prevailed extensively among the colored people, and the assumption that the disease was introduced by the colored ballast laborers, who, after performing their duty in discharging ballast of infected ships, immediately and freely visited the city, is the most probable explanation of the cause of the epidemic.

As will be seen by the reports, vigorous disinfection of the first infected premises, depopulation of limited areas and guarding the same, were carried on with apparently favorable results. August 17, Sanitary Inspector John Guitéras arrived to assist in the preventive measures. On the 8th of September, there having been but three deaths, and fifteen days having expired since the last death, on recommendation of Surgeon Hutton, the report of Sanitary Inspector Guitéras that he had "finished an examination of the cases of fever existing at present and none were suspicious," and the report of P. A. Surg. G. M. Magruder stating that "there seems to be no cause existing for continuing the quarantine," orders were issued to raise the quarantine.

In the meantime all arrangements had been made for the rapid construction of a detention camp at Waynesville, Ga., 25 miles distant, under the direction of Surgeon Hutton, which was completed, ready for occupancy, by September 2. On September 10, Surgeon Hutton was obliged to be relieved on account of physical debility.

On the evening of September 13, two additional deaths from yellow fever were reported by Sanitary Inspector Guitéras, in one of which a certificate of death from consumption had been given. Instructions were immediately telegraphed to employ necessary help for quarantining and disinfecting the infected localities. Passed Assistant Surgeon Geddings arrived, under orders, September 16. Surg. R. D. Murray was ordered from Key West quarantine (Dry Tortugas), arriving there September 18, and reported a strict cordon established. The Postmaster-General was requested to have the mails from Brunswick disinfected. Train inspectors were appointed at Jesup and Waycross. Passed Assistant Surgeon Geddings was ordered to assume command of the detention camp at Waynesville. The railway companies were instructed to sell no tickets south of Atlanta; and on the 16th directions were given to open the camp immediately and make it the only outlet from Brunswick. On the 17th the disease was declared epidemic by the Brunswick board of health. On the 18th, Dr. Paul Von Seydewitz, of New Orleans, was ordered to Atlanta to consult the railway authorities and to prevent Brunswick refugees from going south. The camp was officially opened September 18, under the immediate command of Passed Assistant Surgeon Geddings, Surgeon Murray being the officer in command of all measures in the infected districts. At that time there were twenty known cases in various portions of the city. In addition to the land cordon, a guard of six men with boats as a day and night patrol was established on the Cumberland River to prevent refugees going to Florida by water. Guards were also stationed with boats at convenient points on the mainland and on the adjacent islands to intercept refugees going north by water, the cordon thus being made complete both on land and on water.

A number of physicians of reputation who had themselves had yellow fever and had experience in treating the disease were immediately sent to Brunswick to assist in the management of the epidemic. The details connected with the management of the epidemic will all be found in the reports of the several officers; but in general it may be stated that Surgeon Murray, with a full corps of accomplished surgeons and an experienced hospital steward, was in command within the city, and that his efforts to prevent the contagion reaching other portions of the country were supplemented by the assistance of the revenue cutters at Beaufort and Savannah carrying medical officers of the Marine-Hospital Service, patrolling the waterways north of Brunswick to inspect the guards stationed therein, and in one instance capturing a boat load of refugees and carrying them to the neighboring national quarantine station at Blackbeard Island to undergo a period of detention.

October 4, Surg. H. R. Carter, who had been temporarily transferred for duty in Washington, was ordered to Waycross with the triple object of inspecting rumors of yellow fever prevailing in various localities to which Brunswick refugees had resorted; to intercept any refugees who might escape through the cordon lines, and to establish a system of train inspection which would permit the railroads to con-

tinue traffic without interruption from the sanitary authorities of the various small cities alarmed at the possibility of infected persons coming within their borders.

This service on the outside of the infected area was a new feature in epidemic management and proved very efficacious. It will be seen from Surgeon Carter's report that thirteen places were inspected by him in which it was feared yellow fever existed, and his authoritative statement relieved the communities of the suspicion which rested upon them. Surgeon Carter was assisted by Asst. Surg. J. S. Nydegger and a corps of fifteen sanitary inspectors.

The epidemic was declared at an end November 25. The detention camp was closed November 30. The total number of yellow fever cases in Brunswick during the epidemic was 1,076, with 46 deaths. The disease prevailed at no other locality except Jesup, which, as shown in Surgeon Murray's report, became infected before the disease was declared epidemic in Brunswick.

The following is an extract from the report of P. A. Surg. H. D. Geddings, in charge of the detention camp near Waynesville, Ga.:

"The camp was officially opened for the reception of refugees from Brunswick, Ga., on the 18th of September, 1893, and closed by the order of Surg. R. D. Murray, Marine-Hospital Service, permitting the return of all refugees to their homes in Brunswick, Ga., November 30, 1893. Four hundred and thirty-one persons availed themselves of the privileges of the camp, of whom about 225 were white, and the remainder black and colored. The site of the camp, selected by Surg. W. H. H. Hutton, was 23 miles west of Brunswick, immediately upon and on the south side of the Brunswick and Western Railway, and upon an eminence about 25 feet above the general level of the surrounding country, which is generally swampy, and within a mile of the margin of what is locally known as the Buffalo Swamp. As is usual in this section, the elevation was covered with a dense growth of yellow pine, scrub oak, and black gum trees. The soil was a gray, sandy loam, overlying a stratum of yellow clay, and the natural drainage of the site in all directions was good.

"On my arrival I found that, under direction of Surgeon Hutton, an area 200 feet square had been cleared of trees and undergrowth, and at the four angles of this square rough, but substantial buildings, had been erected, which were used, respectively, as kitchen, white and colored dining rooms, guardroom, quartermaster's store-room, executive office and telegraph office, and commissary. A depot and baggage room were provided at the railway. Along the line connecting the buildings, at an interval of 20 feet, were placed wall tents, 12 by 14 feet, with flies, and subsequently further rows of tents were pitched behind these, and opening on streets 14 feet wide. All tents were provided with substantial floors, raised 6 inches above the ground, and the following equipment was provided:

"For each inmate—one spring wire bottomed cot, one cotton mattress, one hair pillow, two sheets, one pillow case; and for each tent—two tin washbowls, two tin cups, and two wooden chairs. Remarkable ingenuity was displayed by the inmates in the construction of articles of furniture from packing cases, waste lumber, etc. The tents proved of good quality in service, and quite comfortable in all weather. It is suggested, however, that any further tents be constructed with a wall, 18 inches or 2 feet higher, and of 1 foot greater pitch. A hospital establishment of two buildings was provided at a distance of one-half mile from the camp. The following routine was observed, the calls being given by the bugle: 5.30 a. m., reveille and attendants' breakfast; 6 a. m., breakfast; 8 a. m., sick call; 12 m., dinner; 4 p. m., sick call; 5 p. m., supper; sunset, retreat and call to quarters; 9 p. m., tattoo; 9.15 p. m., taps (extinguish lights).

"The meals were substantial, abundant, and as varied as possible. In all cases women and children were served at the first table, and the races were served in separate dining rooms. The following rules were announced and seemed to work well in practice:

"1. At reveille all inmates will rise and prepare for breakfast.

"2. All quarters must be clean, floors swept, and beds made up before first sick call.

"3. Meals will be served in the dining room only and at stated hours, and no meals shall be carried from the dining room to any quarters, except upon the written order of the medical officer, renewed from day to day.

"4. At sick calls all inmates will repair to their quarters and there be visited and inspected by the medical officer, who will prescribe and advise as he deems best.

"5. All suspicious cases of disease shall be isolated at once, and until such time as their nature may be determined.

"6. All cases of infectious diseases will be treated only in the hospital provided for the purpose.

"7. No baggage from infected localities shall be brought into camp until disinfected by such process as may be directed, and only such wearing apparel as may be deemed absolutely necessary will be brought into camp after the disinfecting process.

"8. All wearing apparel shall be a second time disinfected before discharge from camp.

"9. Any person taken ill between the two sick calls shall notify the nearest guard, who will in turn immediately notify the medical officer.

"10. Guards are enjoined, by their vigilance, to prevent the commission of any nuisance near any quarters; should such nuisance be discovered, the inmates of the nearest quarters will be required to police the same under the supervision of the guard, who will report the fact.

"11. Inmates will confine themselves to the inner lines of the camp after retreat (sunset) call.

"12. While innocent enjoyment will be encouraged, the strictest propriety of conduct will be demanded and enforced.

"The discipline of the camp was, in the main, good throughout. But two confinements for misbehavior were required during the whole duration of the camp.

"All baggage was submitted to steam disinfection upon arrival at, and departure from, the camp. The apparatus used was devised by Surgeon Carter, Marine-Hospital Service, and constructed in a baggage car, the steam being supplied by the locomotive.

"In addition to other duties, nearly 1,600 cars, box and flat, were disinfected for the Brunswick and Western Railway, sulphur fumigation being used for box, and drenching with solution of bichloride of mercury (1-800) for flat cars. This disinfection of cars enabled the traffic into Brunswick to be carried on with a minimum of delay and hardship.

"Two cases of yellow fever occurred among the inmates of the camp; one resulted in recovery, one in death. Both cases occurred in the persons of sailors who had arrived at Brunswick on vessels trading there, and both would seem to show a period of incubation of at least five days, thus justifying our detention of ten days."

Following are the rules for train inspection service enforced by Surgeon Carter:

"Inspectors will allow none to board a train, unless with a certificate, between Waycross and Savannah.

"If certificate can be examined before boarding, without detention of train, it must be done, and if unsatisfactory the person presenting same will not be allowed to board.

"After boarding, the certificate and the person must be carefully examined, and the inspector assure himself that the passenger is not recently from Jesup or any infected locality.

"If the passenger is known to be a recent resident of Jesup or any infected locality, or to have been in such place at any time during the past two weeks, he will not be allowed to board, even if he has a certificate.

"If, after boarding, either the certificate or the examination of passenger is not satisfactory, the passenger will be turned over to the city authorities at Waycross or Savannah, or at the place where he desires to stop, if between those places, and the facts noted and reported.

"A record will be kept of the names of all passengers inspected, name of signer of certificate and his rank, date of inspection, date of certificate, and place of boarding train, and where passenger is bound and what disposition is made of him, whether passed or turned over to local authorities; also any other facts worth notice.

"Inspectors will aid local quarantine authorities in any way in their power consistent with their duties, and give them any information, and obey all local quarantine regulations."

It only remains to be noted that the cost of the measures taken by the Government in and around Brunswick was about \$73,000, exclusive of the new quarantine plant.

The Marine-Hospital Bureau has had constructed and now ready for use in any epidemic two portable disinfecting machines—one a sulphur furnace with fan blower and necessary pipes for the disinfection of a portion or the whole interior of a house; the other a steam chamber of sufficient length and width to receive a mattress. Each apparatus is on wheels, and may be readily drawn by two horses, and both are constructed after special designs, including the most recent developments in practical disinfection.

I can not close this paper without commenting upon the sad necessity which occasionally arises in the United States of resorting to the above-described methods of preventing the spread of yellow fever. Unfortunately these measures work a degree of hardship to the people within the infected territory, but on the principle of the greatest good to the greatest number, their enforcement, besides being necessary, is undoubtedly just. The question remains, however, how long have the people of the United States, particularly the southern portion thereof, to be subjected to the possibility of such rigorous measures, and how long must the scourge of yellow fever continue to threaten? Are we to accept this constant menace as a necessary feature of Southern life? Or should we not transfer our energies from the battlefields of epidemics, as it were, and throw them into a campaign against the causes which produce the epidemics?

Now these causes are all practically one, namely, faulty sanitation of cities, a want of sanitary engineering, and the greater the want of sanitation in a given city within the yellow-fever zone the greater is it as a source of danger. Yellow fever is not indigenous in the United States, but the conditions prevailing in many of our Southern seaboard towns and cities are such that, when introduced, it may become nourished, grow strong, and overpower the people. It is incumbent on every State board of health in the South to leave no stone unturned and to work without ceasing until its cities and towns are supplied with perfect sewerage and perfect water supply. In the past yellow fever was a menace to the cities of the North as well as to the cities of the South. Now it gives but little concern on the Atlantic Coast at ports north of Baltimore. Is there any plausible explanation of this other than that the sanitary conditions—in other words, the drainage, the sewerage, the water supply—of cities of the more northern States have been greatly improved? As a preventive, therefore, against the spread of yellow fever, sanitation of Southern cities is of vital importance.

But while we may thus cast the mote out of our own eye, we can not be indifferent to the beam which is in our neighbor's eye. Within 60 miles of our coast of Florida there is an island between which and the United States intimate commercial relations exist. Naturally salubrious, by reason of marked indifference to municipal sanitation, it constantly maintains yellow fever in its harbors and on its shores. I refer of course to the Island of Cuba, and particularly to the port of Havana. Let our Southern cities be ever so perfect in their sanitary arrangements, the danger constantly threatening from Havana and other Cuban ports, from Vera Cruz, from Rio de Janeiro, and other Brazilian ports, would still be great enough to keep us in a state of perpetual alarm. The attention of sanitarians of the United States should be directed to this phase of the yellow-fever situation, and the subject should be constantly agitated until some ameliorating response is received from these neighbor countries.

The following articles, prepared by officers of the Service and embodying the results of their personal experiences during the yellow fever epidemic of 1893 in Brunswick, Ga., are here inserted on account of their practical value:

YELLOW FEVER—SOME REFLECTIONS ON ITS ORIGIN AND METHOD OF SPREAD, ITS THERAPEUTIC TREATMENT AND MANAGEMENT IN EPIDEMIC FORM.

[By H. D. Geddings, Passed Assistant Surgeon, Marine-Hospital Service.]

Probably no disease in the range of medicine has been productive of more literature and so much acrimonious discussion as yellow fever. That this is the case can be easily proved by consulting the catalogue of any large medical library, or by a hasty review of medical periodical literature for the past fifty years.

In view of these statements it might seem that any addition, however small, to this mighty mass of mingled grain and chaff would be useless, superfluous, and capable of fulfilling no good end. An excuse must therefore be sought and framed, and it seems to the writer that a reasonable one is found in the fact that for the past quarter of a century we have gradually grown less familiar with a disease, a dread pestilence, which for over a century had, like Banquo's ghost to the conscience-stricken Macbeth, been annually present to some portion of that part of the seacoast of the United States extending from the Rio Grande on the south to Norfolk, Va., on the north. Nor had long familiarity with the disease diminished its terrors. Year after year we read of its stealthy, unrecognized approach, its insidious spread, its violent outbreak, and then the inevitable result of panic, flight, suffering, and privation, second only, if second at all, to the ravages of the pestilence itself.

Compare the almost annual invasion of the disease in New Orleans, the biennial visitation of Charleston, the epidemics in Mobile, Pensacola, Natchez, Memphis, Cairo, Norfolk, and Philadelphia, with the history of the past decade, during which period but three epidemics, and these of but small proportions, have afflicted the United States.

Again, compare the mortality in the last two of these—about 10 per cent in Jacksonville, Fla., in 1888, and about 6 per cent in Brunswick, Ga., in 1893, with over 50 per cent in Philadelphia in 1820—and I think it will be admitted that the subject holds some interest still. Nor is the cause of this difference in frequency and fatality hard to find. The student of epidemiology and hygiene contrasting the former and present condition of municipal sanitation, the antiquated and barbarous quarantine of simply forty days' detention with the modern enlightened system of maritime sanitation, with from three to five days' detention for purposes of careful observation only, will not find difficulty in deciding why the diminished frequency of invasion, even with a tremendously increased facility and closeness of communication, with known epidemic foci of the disease.

As regards diminished mortality, I have often asked myself of late years whether we have more potent remedial agents than formerly, whether we treat disease more scientifically than the Nestors of medicine who have passed away, or whether, with the passage of years, yellow fever has undergone a reduction in the severity of its type. Interesting though this question be, it must be left to others to solve, and more than likely it will never be settled.

As to the origin of yellow fever, it is hardly necessary to say that at the present epoch previous cases of the disease can alone be regarded as the exciting cause of new outbreaks. Passed is the time when the meteorologist might point to tables of temperature, barometric pressure, dew-point, precipitation, and direction of the wind, and in them, and them only, see the method chosen by Providence for the production of epidemic disease. Passed, forever passed, the day when the local sanitarian or the municipal Dogberry might point with assurance to a given garbage heap as the cause of malaria one week, typhoid the next, and diphtheria or yellow fever at successive periods. Fast passing away is the faction to whom the rising and fall-

ing soil water is the fons et origo of all human ills. Granted the axiom that actual cases of yellow fever or fomites of the disease will cause renewed outbreaks, we come logically to the corollary that where yellow fever is, there must have been prior cases or fomites. How, then, can we guard against one or both? The answer comes in unmistakable tones that only by a careful, vigilant, ceaseless, and fearless supervision of commerce with suspected or known infected localities, a rigid and unyielding supervision of pleasure travel, and the intelligent scrutiny and application of acknowledged efficient processes to possibly dangerous merchandise and vessels and their ballast can we hope to avoid a repetition of the sad summers between 1820 and 1876.

With a constantly increasing commercial intercourse, the ports of Cuba, Mexico, Central and South America, are a standing menace to the United States, by reason of the constant risk of the introduction of yellow fever by merchandise and the passengers and crews of vessels and their personal effects. The national, State, and municipal quarantines and maritime sanitation stations in operation in this country have done yeoman service in preventing the introduction of disease by the routes of commerce, but they are few in number, and in some instances doubtful and weak in methods and administration, and the city of Brunswick, Ga., may be cited as an instance of the havoc and ruin wrought by a local quarantine, maladministered until too late by ordinary municipal methods. Dismissing, then, from consideration as untenable any theories of spontaneous generation of yellow fever, let us briefly consider wherein our danger from the disease lies. We are fortunate in that we have one, and one only, possible endemic focus of the disease in the United States, and this a spot fortunately remote, viz, the city of Key West, Fla., situated on an island in the Gulf of Mexico, only 80 miles north of the island of Cuba, with a climate in which the almost tropical sun shines undimmed even by clouds for nearly half of the year, with a temperature never falling to 50° F., and most of the time ranging over 80° F., a city ill built, undrained, and dirty, we have an ideal nidus for the amplification and propagation of yellow-fever poison which may at any time be introduced by persons, personal effects, and merchandise from Havana.

It is asserted by good authority that there is every year between May and November more or less yellow fever in Key West, which either passes unrecognized or is concealed by the Cuban practitioners, who are numerous in the city. It is only fair, however, to add that equally competent observers deny in toto the endemicity of the disease in Key West. The question, while an important one, must still be regarded as sub judice, and a verdict of "not proven" returned. But look abroad. Here we find the city of Havana within eight hours' steaming of Key West, within twenty-four of Tampa, and within four days of Norfolk, Baltimore, Philadelphia, and New York. The city of Havana is notoriously infected, and hopelessly so, and any change or betterment in sanitary conditions would have to be preceded by a political one, which can not enter into our calculations. The city of Vera Cruz, almost equally dangerous, lies perilously near to New Orleans. A constantly increasing commerce, fortunately still largely conducted in slow-sailing vessels, threatens us with danger from Rio de Janeiro and Santos. Thus it will be seen that our danger is no imaginary one, but that we must, if we would be safe, keep ceaseless watch against a foe that is perpetually lurking at our gates.

Of the specific poison of yellow fever we can conjecture much but prove little. No field of scientific research has been more diligently cultivated; none has yielded a smaller harvest. After ten years' labor Sternberg is compelled to announce that the specific cause of yellow fever remains undiscovered. The alleged discoveries of Gibier, Freire, Carmona y Valle, and Finlay have not been proved and have not fulfilled the four crucial conditions laid down by Koch as necessary before a given micro-organism can take rank as the specific cause of a given disease. The writer labored two years with negative results. Knott, of Atlanta, has ably and modestly expounded the theory that yellow fever is due to poisoning by phosphorus, and cer-



tainly the symptoms, course, and pathological changes, macroscopic and microscopic, entitle his views to respectful consideration and future careful investigation. Though the discussion of theories is out of place here, the writer, as far back as 1888, while on duty in the Jacksonville epidemic, formulated a theory which still remains in the theoretical stage, but which he hopes to elaborate at some future day. It is in brief this: We know that many micro-organisms in the process of growth evolve chemical products, some of deadly potency. We know that among the ways in which bacterial life may terminate are the exhaustion of nutrient medium and a death by the presence of an excess of their own chemical products. It therefore seems plausible to him that the disease is caused by a poison of bacterial origin, the bacterium causing it perishing in the products of its own growth, and that the victim of yellow fever, when presented to us, is suffering from an acute poisoning by an albumose or toxin which it is quite possible may be a phosphide of an organized base, and that base isomeric with digitalin or alkaloids of some of the heart depressants. Several features in the symptoms, the varying period of incubation and course of typical yellow fever make him hope that in this theory will lie the future solution of the yellow fever problem. But be the specific cause what it may, certain it is that it is subtle; that it possesses considerable vitality under favorable conditions of heat, moisture, and organic matter; that it does not yield so completely to desiccation as the cholera spirillum, but that it yields easily to ordinary germicidal agents in ordinary strength, and that even exposure to sunlight and air and washing in water, sea or fresh, is often efficacious. The disease is not communicable from person to person, and is therefore not contagious in the popular sense of the term, but demands that the locality in which it occurs become infected, which requires time, probably several days, when the locality, bedding, clothing, etc., but not the patient, become dangerous to others. Infected bedding, clothing, etc., stored or packed with others are likely to infect the whole mass, and these being removed to a new habitat, may in a short while infect a locality hitherto healthy and establish a new focus of the disease. This explains the transmission of the disease to points widely distant from the original seat of the outbreak and emphasizes the necessity for proper supervision and efficient disinfection of all articles actually infected or suspected of infection. The disease may thus be conveyed along any line of travel, either by rail or sea, as proved by the outbreaks in Fernandina, Gainesville, and Macclenny, Fla., and Decatur, Ala., in 1888.

The necessity is therefore established for the supervision and regulation of travel from an epidemic or endemic focus and the disinfection of personal effects and prohibition of the shipment of dangerous articles of merchandise from such points.

Prophylaxis against yellow fever in the present state of our knowledge may be summed up in one word, and this is "nonintercourse." Nonintercourse with persons from infected localities until the longest possible period of incubation of the disease be passed, disinfection by steam, bichloride of mercury solution, or sulphur dioxide of all personal baggage from the infected districts, and the prohibition of entrance of all household goods, bedding, etc., will be found effective measures. The inoculation experiments of Freire have deservedly attracted attention, and have, in this country especially, been the subject of much criticism of an adverse nature.

In view of the fact that Gaston, of Atlanta, seems to accept Freire's results as really valuable, and that a medical officer of the Navy has informed the writer that he witnessed some of Freire's experiments and was favorably impressed with the results, it seems that it would be advisable to reopen the inquiry, to lay aside preconceived prejudices, and treat the subject at least with calmness and in a judicial spirit. Granted that Freire's claims to the discovery of the specific micro-organism of yellow fever are not well founded, that the "*Cryptococcus xanthogenicus*" is a myth due to faulty technique, still it is just possible that he may from the blood of yellow fever patients have obtained sufficient of the protective proteid to effect the results which he claims.

In discussing the therapeutic treatment of yellow fever it is not proposed, indeed it is impossible, to here present any long array of cases with records of temperature and pulse and detailed symptoms of each particular case. It shall be my endeavor to present nothing that has not been of real value in the hands of my colleagues or myself, and anyone taking the trouble to read this and not finding any particular line of treatment laid down will please bear in mind that this is a record, not of what might have been but of what has been done. The writer believes that the treatment of yellow fever, like that of other acute specific febrile diseases, should be symptomatic and directed toward meeting plain and specific indications. The symptoms may be divided, for convenience, into those (a) belonging to the onset of the disease and those (b) which arise during the course of the illness. Under the first head may be included the chill and subsequent fever, the distressing headache and pain in the back, loins, and limbs. For the relief of these, as well as for properly initiating a systematic treatment, it is believed that the old plan of administering a hot footbath containing mustard is an eminently proper one. The bath hastens reaction from the chill, markedly relieves the headache and pains in the back and legs, and promotes diaphoresis, in this way accomplishing good, and being perfectly incapable of doing any harm. The patient, being then restored to bed, should be covered warmly but not too heavily, and gradually uncovered as diaphoresis proceeds, in order that too great prostration should not ensue. Care of course should be exercised to prevent sudden chilling of the surface. As soon as the patient is made comfortable in bed the remedial treatment should be begun. At this stage this should consist of a sharp purge, preferably mercurial. I have found calomel 0.33 grams, compound powder jalap 0.66 grams, administered in capsules, most efficient. Others prefer the compound cathartic pills, (U. S. P.), of which one, two, or three may be administered, according to the age and general condition of the patient. Should either of these remedies fail to move the bowels freely within six or eight hours it may be followed by a moderate dose of castor oil, a seidlitz powder, or a bottle of citrate of magnesia.

Closely following the first purgative should be administered one of the coal-tar febrifuges, phenacetin 0.50 grams, or antipyrin or antifebrin 0.66 grams, either of which may with advantage be combined with 0.12 grams to 0.18 grams of citrate of caffeine. It will be well to discuss here the effect of the coal-tar series of febrifuges in yellow fever. Possessing as they do analgesic properties of the highest order, being second in this respect only to preparations of opium, in addition to their well-known power of reducing temperatures, they fill a most important place in the treatment of yellow fever. By their use in moderate doses at the inception of the attack we relieve headache and the racking pain in back and limbs, diminish restlessness, and reduce temperature within twelve hours to a point, not normal, but considerably below that at which it stood when reaction from the chill had fully taken place. Indeed, it has seemed to me that the action of the first dose of the antipyretic furnished, in some sort, an index of the course of the particular case under observation. Given a case in which after the administration of the antipyretic the patient passes into an easy sleep and wakes with diminished headache and other pains, a moist skin, and a reduced temperature I feel encouraged to hope, though I do not say, that the case will be mild or of moderate severity and will end in recovery. Given, on the contrary, a case in which the antipyretic produces but slight influence on the temperature, where restlessness is not diminished or controlled, where pain persists, and the skin, though moist, has a burning, pungent feeling, I fear the worst and expect trouble to the very end. Repeated doses of the antipyretic are not needed, or indeed indicated. It is my belief that one, two, or at most three doses in the first twenty-four hours of the disease will accomplish all that is to be gained from this series of remedies. Administered later in the disease, they exercise too depressing an effect on a heart already weakened as a consequence of a toxæmia more or less profound.

The gastric irritability, which is often extreme at the onset of an attack of yellow fever, may be controlled by sinapisms to the epigastrium, abstention from fluids, and frequent ingestion of small pieces of ice, which not only allay thirst, but also tend in themselves to relieve nausea. Should nausea or vomiting persist, the administration of cocaine hydrochlorate, in doses of 0.015 grams to 0.030 grams every hour or two, will often act almost magically. Small quantities of carbonated beverages, as vichy, seltzer, or apollinaris water, ginger ale, or very dry champagne administered ice cold will often prove of service. Creosote has also been highly recommended, and also a mixture containing hydrocyanic acid and morphia. Considerable relief is also derived from the application to the epigastrium of a liniment composed of olive oil and menthol.

On the afternoon of the second or morning of the third day the presence of albumen in the urine may be noted, unless the case be of the most ephemeral mildness. I believe that no case of yellow fever can occur without presenting albuminuria at some time, though that time be limited to a few hours perhaps. It is argued by some that as cases do occur presenting a quantity only recognizable by chemical tests of great delicacy, it is possible that some occur without any. On the other hand, it is argued that a disease so terrible when severe must give some sign, even when very mild. The quantity present on first detection, and its increase or diminution from day to day, form, perhaps, a fairly good guide to prognosis. If it appears, increases gradually, and then begins to diminish, prognosis is good. If, on the contrary, it appears at first in large amount, persists or increases abruptly, trouble may be anticipated.

The two gravest symptoms that can arise during the course of a case of yellow fever are undoubtedly black vomit and suppression of urine. Black vomit is caused by rupture of walls of capillaries or venous and arterial radicles, and the discharge of blood into the cavity of the stomach, where, coming into contact with hyperacid gastric juice, it becomes altered into small masses of brownish-black color, somewhat resembling coffee grounds in gross appearance. Its advent may also indicate a general hemorrhagic diathesis, which may be manifested by hemorrhages from the nose, gums, fauces, rectum, or by extravasations into the connective tissue of the scrotum. The abrupt appearance of black vomit in large quantities without warning is unusual. Careful search will often show minute brown or black particles floating in clear fluid, and presenting the appearance described by some authors as "bee's or butterfly wings." It is not uncommon, however, that patients just before death should vomit a large quantity of black vomit, and that after death the stomach should be found to contain several quarts of the fluid. It would seem probable that in these cases the hemorrhage which produces it was more of an active hemorrhage than a capillary oozing, and that death comes quickly as the result of shock.

How shall we best treat the condition resulting in black vomit? The problem being both to arrest vomiting and to treat the condition giving rise to it, it follows that treatment should be directed toward the general hemorrhagic diathesis. Probably the most efficient remedy is found in the tincture of the perchloride of iron. That should be given in large doses, 1 to 2 c. c. every hour or two, or if vomiting is frequent, after each act of emesis. Counter irritation to the epigastrium, the administration of stimulants, preferably champagne or good brandy administered in carbonated water and given cold, swallowing of ice and administration of cocaine, make up about the sum of our remedial agents. While enough has been said to show that black vomit is a most serious symptom, it does not follow that every patient who vomits black matter will necessarily die. A fair proportion of cases recover after the symptom has manifested itself. Still the ejection of black vomit makes a most profound mental impression on a patient, and for this reason has often hastened a fatal termination in a case which up to the appearance of this accident had done well. Of far graver importance to my mind are the train of symptoms which lead to uræmia, and which are announced by partial or complete suppression of urine. I

believe this to be the gravest accident that can happen in the course of yellow fever. The amount and character of the urinary secretion should be a matter of frequent inquiry in every case, grave, or mild from the inception to convalescence. A sudden and irregular increase in the amount of albumen should put us on our guard against possible urinary suppression, and prompt treatment should be instituted and maintained. Counter irritation over the region of the kidneys, with turpentine or mustard, dry cups, the application of hot-water bags, all should be tried. A tisane of watermelon seeds has long enjoyed the reputation of being almost a specific among the Creole population of New Orleans, and I can bear personal testimony to its efficacy alone or given in combination with spirits of nitrous ether. Of almost equal reputation is a tisane of orange leaves, preferably of the bitter variety, given in large quantities and frequently. A remedy much used in Brunswick in 1893, and vaunted as almost specific by those very successful in the management of the disease, was spirits of turpentine, which was sometimes given in heroic quantity; as much as a teaspoonful at a dose and repeated. I can not speak of the remedy from personal experience, but the results claimed for it warrant its more extended use.

A point in the treatment of yellow fever, with the importance of which I am much impressed, is the frequent washing out of the lower bowel with enemata of warm water and soap. Constipation is the rule in yellow fever, and no one who has noted the exceedingly fetid, almost putrid, character of the stools of a yellow fever convalescent can fail to see the wisdom of removing the chances of septic absorption by frequent washing away of this fermenting mass. Pass a well-oiled rectal tube as far up into the bowel as possible, and with a fountain syringe elevated not more than a foot or two, force slowly two or three pints of warm, soapy water into the bowel. The whole operation should be performed with the patient upon a bed-pan, not seated upon a vessel or close stool. The effect upon the temperature and general condition of the patient is most marked.

As to the use of quinia or allied preparations in yellow fever, I concur in the generally accepted verdict that they are without specific effect. But as yellow fever almost always occurs in regions where malarial diseases are also rife, and as the intercurrent of a malarial paroxysm is one of the most disagreeable incidents that can mar the course of a case of yellow fever, I consider it good practice in such regions to administer 2 to 3 grams of quinine or cinchonidia in the first twenty-four hours, exhibiting the drug per rectum if the stomach is irritable.

A most important point in the management of yellow fever is the diet. Many a patient, his crisis past and the borders of convalescence reached, has been hurried into an untimely grave by the misplaced kindness of an apparently simple meal. The yellow fever patient should never be starved; on the contrary, he should be well nourished, but the most scrupulous care should be exercised in the selection and administration of his diet. "A little and that often" should be the rule. For the first few days milk with limewater given cold, then animal broths, concentrated but free of fat should be the regimen. The fever being reduced, soft-boiled eggs, milk toast, and small bits of the white meat of chicken and tenderest of steak may be permitted. Probably at least ten days or two weeks should elapse before the convalescent, by the easiest of stages, should be permitted to resume ordinary diet.

The management of yellow fever in epidemic form involves the problems of the care of those actually stricken with the disease; the supervision of those ill with suspected yellow fever; measures for the prevention of the spread of the disease, and, most difficult of all, the task of regulating the panic-stricken flight of the inhabitants of the infected city in such a way as to involve the least danger to cities, towns, and sections of country chosen as places of refuge. As this paper is largely the result of experience acquired in the epidemics of 1888 and 1893, it will be my endeavor to make no suggestions which have not borne the test of practical application, or been elaborated to meet difficulties which have arisen in the past. The subject will further be considered only from a service point of view, i. e., from

a time when the national authority, under the provisions of the act of February 15, 1893, has been invoked to handle an epidemic which is beyond the control of municipal or State authorities, and which endangers the well-being of surrounding cities and States. Therefore the first question to be considered in logical order is the regulation of the flight of the panic-stricken to places of safety. To the student of epidemiology there is a melancholy sameness in the early history of all yellow-fever epidemics. They begin with the occurrence, usually in the early spring, of cases of a disease which differs in course and responsiveness to treatment from the diseases usually prevailing in the particular locality at that season of the year. More cases follow, probably in widely scattered localities, but all, on subsequent investigation, traceable to the one original source. Then follows the period of doubt, then the period of suppression for commercial reasons; then the honest announcement of a conscientious local physician of the nature of the disease, the demand for the "yellow-fever expert," and his bitter denunciation by press and public, and doubt becomes certainty, and then follows panic, wild and unreasoning, and then flight. City after city closes its gates against the fleeing unfortunates, and women and children are hustled from place to place seeking shelter and food, and in many smaller places being confronted by a shotgun in the hands of a thoroughly aroused and scarcely less terror-stricken native. How is this deplorable feature of all epidemics to be avoided? The answer is found in the establishment of camps of detention or probation, which, while not a very modern idea, first found practical, successful exemplification at Camp Perry, Fla., in 1888. The practical outcome of that camp is to be found in the Annual Report of the Supervising Surgeon-General, Marine-Hospital Service, for that year, and that of Camp Detention in Annual Report of 1893. The theory of these camps is in brief that here, under good hygienic surroundings and competent medical supervision, fugitives from yellow fever may pass a period exceeding the duration of the period of incubation of the disease, and then with disinfected baggage, and provided with a certificate setting forth the fact of detention, observation, and disinfection, proceed in safety to any city or place recognizing the value and validity of such certificates.

In 1893 the eminent sanitarian at the head of the Alabama State board of health was the only one who refused to honor these certificates. The unreasonable nature of his scruples is proved by a search of the records. Out of the 1,200 passed through Camp Perry in 1888 and the 430 passed through Camp Detention in 1893 he is challenged to find, if he can, one single case of yellow fever developed in any person after discharge from either camp. It being unnecessary to dwell upon the construction, management, and description of such camps in this article, the question arises how long such camps should be maintained as camps of probation. It strikes me most forcibly that the plan heretofore pursued of maintaining them during the whole existence of the epidemic is wrong in theory and injurious in practice. In my opinion, it would be better and productive of more satisfactory results if, upon opening the camp of detention, it were announced that the duration of the camp would be from thirty to forty-five days, and that after that time those remaining in the infected city must there remain until the epidemic ceases. While it is probable that a city can not be emptied entirely by any method short of the suspension of the civil and establishment of military procedure, it is believed that this method would go far toward causing an exodus of all financially able to move, would diminish the amount of material on which the disease might prey, with a corresponding diminution of scattered foci of infection, and give better opportunity for the exercise of repressive measures. Once out, there should be absolutely no method of return to the infected city, save documentary evidence of undoubted authenticity, and from a reputable source, of immunity from the disease by reason of a previous attack. All communication with the infected center should be absolutely cut off, save that for the carrying of the actually necessary food and medical supplies and the mails. If for no other reason, passage into the infected city should be prohibited as tending

to diminish popular belief in the impassability of the guard line. Human nature is prone to self-glorification, and instances have been noted of individuals to whom was granted written permission to pass within the guard line afterwards relating purely fictitious histories of their skillful evasion of the vigilance of guards. Every possible avenue of escape or entrance by land or water should be closely guarded, and it is a serious question if better results and more effective vigilance would not be obtained by securing the services as guards of persons remote from the epidemic center, as being less likely to be influenced by considerations of kinship, friendship, or local affiliation.

Railroads and other lines of travel should be most closely scrutinized, for it is notorious that given two competing lines of railroad, one will scrupulously observe all quarantine regulations, while the other will evade them, and thus profit by the conscientiousness of its rival. To summarize: The stricken city should be put into a condition as closely resembling a state of siege as is consistent with the resemblance of the merciless errand of war to the mild and gentle errand of sanitary science.

Having thus provided for the safety and comfort of those fleeing from danger, and the safety of those to whom they may flee, it remains to consider the methods to be pursued in the management of the epidemic itself, and upon the field of its full activity. Here the first essential is a most active, vigilant, and inflexible administrative head, and I maintain that he can accomplish the most good by confining himself closely to his administrative duties and leaving professional work to his assistants, for did he possess the powers of a Cæsar, contingencies would arise that would try them all. His must be the head to plan, and the firm hand to direct.

I believe that it goes without saying that the more the epidemic can be concentrated into a small area, the easier it will be handled and the shorter will be its duration. Therefore it seems to follow naturally that if all cases as they develop could be removed to central points (large hospital establishments) foci of infection would be diminished in number, and ease of administration and observation secured.

To at once remove a patient to hospital, disinfecting immediately the room from which he had been removed, together with its contents, and then keep the persons by whom he had been surrounded under observation as suspects, would, to my mind, be an ideal method of procedure. It will be objected that in the case of large families this might require more than one disinfection to meet probably successive cases. I maintain that 6, 8, or 10 disinfections would be cheaper in money, and effect more than allowing one more dangerous center to become established. Again it will be objected that a certain number of cases will be concealed, and that removal to hospital will be injurious to patients. I maintain that a house-to-house inspection made sufficiently often will reduce the first to a minimum, and that cases of yellow fever in the early stages bear removal with remarkable safety. Here, too, the ordinary principles of humanity and professional care and prudence must govern. Again it will be urged that this plan would necessitate the erection of large and necessarily expensive buildings, which would take time to erect and which would be not only useless but dangerous when the epidemic was ended. I will endeavor to prove to the contrary by showing briefly how a most excellent, commodious, and quickly erected hospital, or ward of a general establishment, can be erected, the requirements being three United States army-hospital tents, 14 by 16 feet, with their flies, and sufficient lumber to construct floors and frames. A floor 48 feet in length, and the width of a tent, is laid on stringers placed transversely. Studs equal in height to a tent wall are then cut and spaced along the long side of the floor, seven on each side, and securely toe-nailed to the floor and secured to a plate nailed along the tops. Seven sets of rafters are then cut, corresponding to the pitch of the tent roof, and placed in position, using an inch plank as a ridge pole. The rafters are then secured by a few short braces secured transversely across the angles. Over this frame the tent is stretched and secured by battens and galvanized nails. The fly is then

stretched as usual and then secured either to pegs or a light framework by its own guys. There is thus constructed a ward, weather tight, well ventilated, and which by means of the flaps of the tents can be thrown into one or separated into three compartments. Such a ward can be multiplied indefinitely, will accommodate twelve to sixteen patients, and can be administered with two nurses. It is, of course, to be remembered that the opposition of patients to treatment in hospitals is sometimes extreme. In such cases a campaign of education must be entered into to prove to such individuals that the attention received and results attained in hospitals fully equal those attained in their own homes. The employment of nurses in yellow fever epidemics is a most vital and pertinent question. Immunity against the disease is of course a most important consideration in a yellow-fever nurse, but unfortunately the mental and moral character of the average volunteer nurse is far from satisfactory. A yellow fever epidemic bears a strong similitude to a boiling pot; all impurities in a community are brought to the surface. The hospital plan of treatment would have the advantage that nurses would be kept under better surveillance, and much incompetency, drunkenness, and consequent neglect and suffering of patients might be avoided. It seems to the writer that an organized association of yellow-fever nurses with branches in all Gulf and South Atlantic cities, admission to which could only be had on presenting proofs of immunity, sobriety, and efficiency from reputable physicians, would fill a want and furnish a body of experienced helpers to move to the site of an epidemic on call and in such numbers as might be required.

A most important point is the disinfection of dwellings where cases of yellow fever have occurred. A specially constructed portable steam disinfecting apparatus will render this process much more rapid and efficient, at a cost which will seem small in comparison with the results achieved. Articles of wearing apparel, bedding, hangings, curtains, etc., should be disinfected by steam at 102° C. for at least thirty minutes. Articles injured by steam should be immersed in solution of mercuric chloride 1-1000 or solution of pure carbolic acid 1-20. Rooms should have their floors and woodwork scrubbed with the mercuric chloride solution; the walls, if papered, stripped and washed and repapered, or, after scrubbing with soap and water, the whole apartment should be subjected to fumigation with sulphur dioxide, 10 per cent in volume, with twelve hours exposure, the room being previously rendered as air-tight as possible. To attain this percentage of gas the sulphur must be burned in a special furnace, and the product forced in by a blast. Probably the most convenient plan would be to use liquefied sulphur dioxide, rendered gaseous by release from pressure, the gas being conducted into the apartment by means of a hose or lead pipe. It is suggested that a special epidemic train might with advantage be equipped and kept in readiness for emergencies. This train should be composed of a car carrying an approved form of steam chamber and possibly a sulphur furnace, cars loaded with tents, cooking apparatus, and camp equipage, and a tank car for the transportation of water for use of the disinfecting apparatus. Steam could be furnished by a locomotive hired for the purpose, or could be generated in a boiler erected upon another car.

TABLES SHOWING THE RESULTS OF OBSERVATIONS WITH REGARD TO REMITTENT  
AND YELLOW FEVERS, TAKEN DURING THE YELLOW FEVER EPIDEMIC OF 1893,  
IN BRUNSWICK, GA.

[By A. R. Booth, Acting Assistant Surgeon, Marine-Hospital Service.]

NOTE.—These tables relate to the patients treated individually by Dr. Booth.

TABLE NO. 1.

YELLOW FEVER.

Whites:	
Males.....	3
Females.....	7
Total whites.....	10
Colored:	
Males.....	58
Females.....	89
Total colored.....	147
Total whites and colored.....	157

MALARIAL FEVER, REMITTENT.

Males.....	39
Females.....	29
Total.....	68
Whites.....	0
Colored.....	68
Total.....	68

OTHER DISEASES.

Diseases of the respiratory system.....	2
Diseases of the digestive system.....	3
Malarial fever, intermittent.....	31
Other diseases.....	11
Total.....	47

SUMMARY OF ALL CASES.

Yellow fever.....	157
Malarial fever:	
Remittent.....	68
Intermittent.....	31
Diseases of the respiratory system.....	2
Diseases of the digestive system.....	3
All other diseases.....	11
Total.....	272



TABLE NO. 2.—YELLOW FEVER CASES.

[Giving ages, sex, and color and the number of cases occurring in each period of five years.]

Ages in groups of five years.	Whites.					Colored.					Per cent, both white and colored.
	Number of males.	Number of females.	Per cent of males.	Per cent of females.	Per cent, both males and females.	Number of males.	Number of females.	Per cent of males.	Per cent of females.	Per cent, both males and females.	
Under 5 .....		1		14.29	10	7	3	12.11	3.39	6.80	7.04
5 to 10 .....		1		14.29	10	8	8	13.84	9.64	10.88	10.88
10 to 15 .....						2	9	3.46	10.17	7.48	7.04
15 to 20 .....	1	1	33.33	14.29	20	7	11	12.11	12.43	12.24	12.30
20 to 25 .....		1		14.29	10	8	18	13.84	20.84	17.68	17.28
25 to 30 .....						13	16	22.49	18.08	19.72	18.56
30 to 35 .....	1	1	33.33	14.29	20	2	9	3.46	10.17	7.48	8.32
35 to 40 .....		2		28.57	20	5	10	8.65	11.30	10.20	10.88
40 to 45 .....						3	1	5.19	1.13	2.72	2.56
45 to 50 .....	1		33.33		10	1	2	1.73	2.26	2.04	2.56
50 to 55 .....											
55 to 60 .....						1		1.73		.68	.64
60 to 65 .....							2		2.26	1.36	1.28
65 to 70 .....											
70 to 75 .....											
75 to 80 .....						1		1.73		.68	.64

TABLE NO. 3.—MALARIAL FEVER, REMITTENT.

[Giving the ages, in periods of five years, the sex, and the number of each, together with the per cent, by sex, to the total number of each sex, and the per cent of both to the total number of cases.]

Ages in 5-year periods.	Number of males.	Number of females.	Total.	Per cent of males.	Per cent of females.	Per cent of both to total number of cases.
Under 5 .....						
5 to 10 .....	4		4	10.260		5.88
10 to 15 .....	4	5	9	10.260	17.25	13.23
15 to 20 .....	8	5	13	20.520	17.25	19.11
20 to 25 .....	3	8	11	7.695	27.60	16.17
25 to 30 .....	7	8	15	17.955	27.60	22.05
30 to 35 .....	3		3	7.695		4.41
35 to 40 .....	3	3	6	7.695	10.35	8.82
40 to 45 .....	4		4	10.260		5.88
45 to 50 .....	3		3	7.695		4.41

TABLE NO. 4.—YELLOW FEVER CASES.

[Showing the maximum temperature reached, the number of cases reaching same, by sex and color, the per cent of each for each sex and color, and the per cent of each group to the total number of cases.]

Temperature in degrees Fah- renheit.	Whites.					Colored.					Per cent of white and colored cases.
	Number.		Per cent by sex.		Per cent of cases.	Number.		Per cent by sex.		Per cent of cases.	
	Males.	Fe- males.	Males.	Fe- males.		Males.	Fe- males.	Males.	Fe- males.		
105.2						1		1.13		.685	.64
105						5	4	8.60	4.49	6.165	5.76
104.4		1		14.29	10	1	3	1.72	3.39	2.740	3.20
104.3							2		2.26	1.370	1.28
104.2						1	1	1.72	1.13	1.370	1.28
104.1						2	6	3.45	6.74	5.400	5.12
104	2	2	66.66	28.58	40	17	19	29.24	21.47	24.660	25.60
103.4		4		57.16	40	10	19	17.24	21.47	19.805	21.12
103.3	1		33.33		10	7	6	12.09	6.74	8.905	8.96
103.2						1	7	1.72	7.91	5.400	5.12
103.1						2	4	3.45	4.49	4.110	3.84
103						5	6	8.60	6.74	7.535	7.04
102.4							4		4.49	2.740	2.56
102.3						1	1	1.72	1.13	1.370	1.28
102.2						1	2	1.72	2.26	2.055	1.92
102							1		1.13	.685	.64
101.2						1		1.72		.685	.64
101.1							2		2.26	1.370	1.28
101						1		1.72		.685	.64
100.4						1		1.72		.685	.64
100						1		1.72		.685	.64
99.4						1		1.72		.685	.64
99							1		1.13	.685	.64

TABLE NO. 5.—MALARIAL FEVER, REMITTENT.

[The highest point of temperature reached, the number of cases attaining same, their sex, and the per cent of cases in each group of each sex, and the per cent of each to the whole number of cases.]

Temperature in degrees Fahrenheit.	Number of cases.		Total males and females.	Per cent of each.		Per cent of both to whole number.
	Males.	Females.		Males.	Females.	
105.2		1	1		3.45	1.47
105	1	1	2	2.56	3.45	2.94
104.4	3	4	7	7.69	13.80	10.29
104.3	1	1	2	2.56	3.45	2.94
104.2	2	2	4	5.13	6.90	5.68
104.1	6	4	10	15.39	13.80	14.71
104	14	7	21	35.90	24.14	30.88
103.4	12	5	17	30.77	17.24	25
103.3		2	2		6.90	2.94
103.2						
103.1						
103		2	2		6.90	2.94

TABLE NO. 6.—YELLOW FEVER, MAXIMUM AND MINIMUM PULSE.

[Exhibiting the maximum and minimum pulse in groups of cases having same change.]

Pulse.	Whites.				Colored.				Total per cent of white and colored.
	Number of males.	Per cent of males.	Number of females.	Per cent of females.	Number of males.	Per cent of males.	Number of females.	Per cent of females.	
130 to 80.....					2	3.45	1	1.12	1.91
130 to 75.....					1	1.72	3	3.37	2.55
130 to 70.....					2	3.45	5	5.62	4.46
130 to 65.....							2	2.25	1.27
130 to 60.....							1	1.12	.64
130 to 55.....							1	1.12	.64
125 to 75.....							1	1.12	.64
125 to 70.....					1	1.72	3	3.37	2.55
125 to 65.....							1	1.12	.64
125 to 60.....							1	1.12	.64
125 to 55.....					1	1.72			.64
120 to 90.....					1	1.72			.64
120 to 80.....					2	3.45	1	1.12	1.91
120 to 75.....			1	14.29	4	6.90	11	12.35	10.20
120 to 70.....	1	33.33	4	57.16	16	27.52	20	22.47	26.12
120 to 65.....	1	33.34			2	3.45	5	5.62	5.10
120 to 60.....					5	8.62	5	5.62	6.37
120 to 55.....							1	1.12	.64
120 to 50.....					1	1.72	1	1.12	1.27
115 to 85.....					1	1.72			.64
115 to 80.....							1	1.12	.64
115 to 75.....			1	14.29	3	5.17	8	8.99	7.64
115 to 70.....			1	14.29	1	1.72	2	2.25	2.55
115 to 65.....					2	3.45	1	1.12	1.91
115 to 60.....							1	1.12	.64
110 to 75.....							1	1.12	.64
110 to 70.....					3	5.17	5	5.62	5.10
110 to 65.....					1	1.72	1	1.12	1.27
110 to 60.....	1	33.33			1	1.72	2	2.25	2.55
110 to 50.....							1	1.12	.64
105 to 75.....					1	1.72			.64
105 to 70.....					2	3.45			1.27
100 to 80.....					1	1.72			.64
100 to 75.....							1	1.12	.64
100 to 70.....					1	1.72	1	1.12	1.27
90 to 70.....					2	3.45	1	1.12	1.91
75 to 65.....							1	1.12	.64
60 to 45.....					1	1.72			.64

TABLE NO. 7.—MALARIAL FEVER, REMITTENT.

[Exhibits the maximum and the minimum pulse, the number of cases reaching like extremes, the per cent of each as to sex, and the whole number of cases. No whites; color black.]

Pulse, maximum and minimum, by fives.	Number.			Per cent, maximum and minimum, by sex.		Per cent to total cases.		Per cent both as to all cases.
	Males.	Females.	Total.	Males.	Females.	Males.	Females.	
160 to 95.....	1		1	.256		.147		.148
150 to 95.....	2	1	3	.514	.345	.294	.235	.444
150 to 85.....		1	1		.345		.235	.148
150 to 80.....	5	2	7	1.280	.690	.735	.470	1.036
150 to 70.....	4	1	5	1.024	.345	.588	.235	.740
145 to 85.....		1	1		.345		.235	.235
145 to 80.....	6	1	7	1.536	.345	.882	.235	1.036
145 to 70.....	1	1	2	.256	.345	.147	.235	.296
140 to 90.....	1		1	.256		.147		.148
140 to 85.....	1		1	.256		.147		.148
140 to 80.....	7	5	12	1.792	1.725	1.029	1.175	1.776
140 to 75.....	3	1	4	.768	.345	.441	.235	.592
140 to 70.....	2	2	4	.512	.690	.294	.470	.592
135 to 80.....	1	2	3	.256	.690	.147	.470	.444
135 to 75.....	1	1	2	.256	.345	.147	.235	.296
135 to 70.....	2	3	5	.512	1.035	.294	.705	.740
130 to 80.....	2	2	4	.512	.690	.294	.470	.592
130 to 75.....		2	2		.690		.470	.296
130 to 70.....		3	3		1.035		.705	.444

TABLE NO. 8.—YELLOW FEVER CASES.

[Giving the hour at which the chill or rigor occurred.]

Hour.	Whites.				Colored.				Per cent of white and colored.
	Number of males.	Number of females.	Per cent of males.	Per cent of females.	Number of males.	Number of females.	Per cent of males.	Per cent of females.	
Day.									
6 a. m.						1		7.69	4.55
7 a. m.						2		15.38	9.10
8 a. m.					1	1	20	7.69	9.10
9 a. m.					3	1	60	7.69	18.20
10 a. m.									
11 a. m.									
12 m.						1		7.69	4.55
1 p. m.	1	1	50	50		1		7.69	13.65
2 p. m.									
3 p. m.					1		20		4.55
4 p. m.	1		50						4.55
5 p. m.		1		50		2		15.38	13.65
6 p. m.		1				1		7.69	4.55
7 p. m.						3		23.07	13.65
8 p. m.					1	3	1.89	3.96	2.96
9 p. m.		1		20	9	9	17.01	11.88	14.06
10 p. m.					1	4	1.89	5.28	3.70
11 p. m.		1		20	8	8	15.12	10.56	12.58
12 p. m.		1		20		1		1.32	1.48
1 a. m.		1		20	8	14	15.12	18.48	17.02
2 a. m.					9	13	17.01	17.18	16.28
3 a. m.					6	13	11.34	13.20	11.84
4 a. m.		1		20	7	11	13.23	14.52	14.06
5 a. m.	1		100		4	3	7.56	3.96	5.92

TABLE NO. 9.—MALARIAL FEVER, REMITTENT.

[Giving the hour at which the chill or rigor occurred.]

Hour of chill.	Number of males.	Number of females.	Total.	Per cent of males.	Per cent of females.	Total per cent of both.
6 a. m.		2	2		6.90	2.94
7 a. m.	4	3	7	10.26	10.35	10.29
8 a. m.	4	2	6	10.26	6.90	8.82
9 a. m.	7	2	9	17.95	6.90	13.23
10 a. m.	1		1	2.56		1.47
11 a. m.	4	4	8	10.26	13.80	11.76
12 m.		1	1		3.45	1.47
1 p. m.	3	3	6	7.69	10.35	8.82
2 p. m.	3	2	5	7.69	6.90	7.35
3 p. m.						
4 p. m.	1	2	3	2.56	6.90	4.41
5 p. m.		2	2		6.90	2.94
6 p. m.						
7 p. m.	1	1	2	2.56	3.45	2.94
8 p. m.	2	1	3	5.13	3.45	4.41
9 p. m.	3	2	5	7.69	6.90	7.35
10 p. m.						
11 p. m.	2		2	5.13		2.94
12 p. m.						
1 a. m.		1	1		3.45	1.47
2 a. m.						
3 a. m.	1		1	2.56		1.47
4 a. m.						
5 a. m.	3	1	4	7.69	3.45	5.88

## SOME OBSERVATIONS ON YELLOW FEVER IN BRUNSWICK, GA., IN 1893.

[By C. Faget, M. D., Sanitary Inspector, Marine-Hospital Service.]

These observations answer several questions of interest to the physicians of the South as to the mildness of this last epidemic, the treatment pursued, the efficacy of the tincture muriate of iron and of antipyrin, as to nonalbuminuric yellow fever, as to the prevalence of the fever among the negroes, the prevalence of malarial fever, and the complications of malarial with yellow fever.

It is my conviction that there were considerably more cases of yellow fever among the negroes than were reported, especially in the beginning of the epidemic, when the presence of yellow fever was denied by many, and it was impolitic to declare cases without sufficient evidence to sustain the diagnosis. Before the arrival of Drs. Wall and Booth, the two colored physicians of Brunswick saw about fifty cases a day that were not reported. I saw some of these cases, and from the argument of epidemic coincidence I am persuaded they were yellow fever cases. Two, three, or four colored people would be taken sick at the same time in the same house, having, as a rule, one day of fever, sometimes two or three, without any differential diagnostic signs. I examined the urine for albumen (layer test) in many cases and failed to find any. It might be objected that I did not examine the urine of a given patient every day. I did so with that object in view. Were they light cases without albumen in the urine? I do not doubt the importance of this diagnostic sign, but I am sure that it is absent in some of the mild cases. As a rule it is not sought for in these cases, especially among negroes. It is especially in severe cases that it is looked for as a guide to the prognosis. Apart from the ground of epidemic coincidence, I saw genuine cases of yellow fever among the negroes; the case of Brl Edwards, who died under my observation with all the symptoms of yellow fever, the low pulse, and the urine loaded with albumen; I will cite also No. 64, Albert Harper, and Nos. 73 and 119, who had the diagnostic low pulse. For the more severe epidemic of 1878 I have a great number of notes of characteristic yellow fever among the negroes.

As to the opinion which prevailed that the negroes were not subject to yellow fever before the war, the explanation of the present apparent change in this respect is that the almost yearly visitations of yellow fever in the South before the war made them immune from infancy, while at present sixteen years have elapsed since the prevalence of a widespread epidemic, and that due, evidently, to better systems of quarantine. This explanation holds good for the traditional immunity of the New Orleans born, as it is still the traditional fact for the natives of Havana and Vera Cruz.

As a rule, babies or very young children have it so lightly that it may pass unnoticed, but sometimes they are stricken down, dying in convulsions in a day or two, and the true diagnosis is not ascertained.

The influx of the country negroes into the towns must also have been more restricted before the war, and in presence of a dangerous epidemic among the whites the few light cases among them passed unnoticed.

That they have a lighter form of yellow fever than the whites is evident, and, by-the-by, could not an antitoxine be found in a negro lad convalescing from a true attenuated form of yellow fever to cause a light case in the white, as in the case of the inoculation of smallpox?

It is my opinion that most negroes who died during the epidemics of yellow fever died of complications, generally malarial, or through bad treatment, starvation, and purging. I am certain I have saved many through proper feeding. During this epidemic I saw two cases of severe dysentery following the fever and a case of suppression of urine for forty-eight hours in a negro woman who recovered. I witnessed about ten autopsies performed by Surgeon Murray, and in my opinion all those I witnessed bore evidences of yellow fever. One was a Chinaman. Everything was

characteristic of yellow fever for the whites also, with the exception of one or two, perhaps, which were complicated with malaria; for the negroes, in about four or five there were evidences of malarial complications. In one case the liver was as dark as possible, without any patch of yellow, the spleen was enlarged and friable, but the stomach and intestines were congested and the kidneys were blood red and as highly congested as I ever saw them. The urine contained albumen without a doubt. That was the opinion of all the physicians present. I believe there were more malarial complications before, during, and after an attack of yellow fever during this epidemic than I ever saw before. The course of the fever is not as typical on that account in many cases as I have seen it in the 213 observations I took in 1878 in Vicksburg. I am persuaded that an acid or a certain proportion of acids in the urine would be found in yellow fever of great value for diagnostic purposes. It is left to a practical chemist to find a chemical test for that acid. I owe to the kindness of Professor Bonchart, of Paris, the following note: "Shultzen has found in the urine of phosphorus poisoning and in the urine of acute atrophy of the liver a body isomeric to sarcosolactic acid, which is apparently the aldehyde of glycerine. It is well to make the remark that Wislicenus states that sarcosolactic acid is nothing else than paralactic acid with a very small quantity of lactic acid of fermentation." Has the sugar test been applied in yellow fever?

*Treatment.*—About the practical treatment, the first thing in order, the first indication, is to relieve the general and intense pains in the head, back, and limbs, and to abate the fever or prevent its rising too high. We have now a splendid remedy in antipyrin or in exalgine. Phenacetin, in my opinion, is not as efficacious, and antifebrin requires too much caution. However, this is a matter of personal experience. It was my great desideratum in 1878 to have something to lower the temperature better than cold-water affusions. I have given antipyrin in 10-grain doses every three or four hours extensively, and I have yet to see any bad effect I could ascribe to it. As high temperatures in yellow fever generally indicate bad cases, I believe that by keeping the temperature down a case can be rendered light which otherwise would have been severe. It succeeds admirably to relieve the pains. I also prescribe a liniment for that purpose: Chloral and camphor, of each 1 ounce, with 15 grains of atropine. It is not dangerous and certainly effective. Then a light purge of magnesia (Husband's), one to two teaspoonfuls, to be continued in lighter doses, in milk, every day; and, if the bowels are sufficiently open—one passage a day—bicarbonate of soda, with the object of counteracting the acidities of the stomach and of the secretions generally. The careful feeding of the patient is most important—milk in abundance; broth without grease, two or three times a day; and soft-boiled eggs, two to six a day—some stimulants only in the stage of depression; the elixir Ducloré, a French preparation of meat juice and good brandy that is well borne by the stomach; champagne when the prostration becomes alarming. But beware of exciting acidities in the stomach and determining thereby the oozing of blood (black vomit). During the latter part of the epidemic of 1878, during that of 1888 in Florida, and during this last, I have given to all my cases the tincture of chloride of iron, 10 to 20 minims, in glycerine and sirup every four hours, and in threatened black vomit 40 minims with the best results, I believe, as an hemostatic antiseptic and blood reconstituent. After the epidemic of Florida in 1888, I met Doctor Llenas at Puerto Plata (Santo Domingo). He was enthusiastic about the treatment of yellow fever with the perchloride of iron, which he gives in 20 to 40 drops during the day (much higher doses than mine). He gives also sulphuric lemonade, 10 grains of quinine every morning; 30 grains of bromide of potassium at night; occasionally citrate of magnesium, and nothing more than 3 cups of broth a day. He wrote a paper on this treatment by the perchloride of iron to the Medical Society of Nantes (France), in 1886. He says the result of this treatment is marvelous in comparison with others, and yellow fever is certainly more severe in the West Indies than in the United States.

I will cite cases Nos. 1, 11, 14, 41, 95, 96, 102, and 114, where the tincture of iron stopped the black vomit or hæmatemesis and saved the patients. The six fatal cases it was my bad luck to have, Nos. 15, 21, 27, 28, 29, and 112, did not take the remedy on account of their being too delirious from the start. Two or three took an occasional dose in the first day or two, but not enough to have any effect. I also believe it is the remedy in diphtheria, locally and internally.

I would like to try the treatment by olive oil as the Spanish physicians use it. I believe it would allay the acidities of the alimentary canal, as it does in acid dyspepsia, the irritability and congestion of its mucous membranes, and might have a good effect on the portal circulation of the liver, relieving the intense congestion of the portal system. But what is of most importance is an abundance of liquids, water and milk, with a small piece of ice, to promote diuresis and the excretions generally.

I attended more than 130 cases during this epidemic. I kept a record of 123. For yellow fever, 115 cases—68 whites and 47 colored; 6 deaths—4 whites and 2 colored (one a mulatto, the other a negro). Eight cases of malaria recorded—5 whites and 3 colored. I have seen many more that were not recorded. The case of Mrs. Perrin, who had been attended by two physicians, was transferred to me when she was moribund.

Before closing this report I would like to suggest, should a like occasion arise of an epidemic in a small town without adequate hospital accommodations, that a temporary hospital, or more than one, be at once established—hospital tents and small houses—as at Camp Perry and at the detention camp, near Waynesville; with a physician in charge, who would make it his headquarters, with good nurses and necessary accommodations. More patients could be properly attended than when distributed throughout the town. Such a hospital was a sad need in Brunswick.

I would also like to see liquid ammonia used for disinfecting material in box cars or in houses. Its freezing and germicidal properties, I believe, would be better adapted to the peculiar germ of yellow fever, which does not resist cold, and it would be less injurious than steam or sulphur fumes to leather and other material.

#### SMALLPOX.

During the year smallpox has prevailed in the following States and Territories, namely, Arkansas, Arizona, Connecticut, Georgia, Illinois, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New York, Ohio, Pennsylvania, Rhode Island, Tennessee, Vermont, District of Columbia, and Wisconsin. The suppression of this disease has been left, except in two instances, to the State or local authorities without aid from the Bureau, the two exceptions being at Chicago, Ill., and Washington, D. C.

A number of inspections have been made, by orders from the Bureau, of infected localities, with a view to determining the presence of the disease. The aid to Chicago was not to the city direct, but consisted in the vaccination of seamen and crews of outgoing vessels, with a view to protecting the other cities on the Lakes.

#### SMALLPOX IN CHICAGO, ILL.

DEPARTMENT OF HEALTH,  
*Chicago, April 3, 1894.*

SIR: Yours of March 31 asking for information regarding the prevalence and mortality of smallpox in Chicago received. During 1893 we had in Chicago 140 cases of smallpox. Excepting March and May it occurred every month during the year.

Thirty-five cases, however, were in November and 66 in December. There were 23 deaths, none of which occurred in any who had been successfully vaccinated, and but few of the cases could be traced to their origin. Some, however, were traced beyond the city, others to emigrants as the most probable source of infection, yet early in the summer we found 3 cases within two days in three different sections of the city.

Careful and extended investigation leads me to the belief that during the early summer there were several cases of smallpox of a very mild character among the people who mingle continuously with the public, the disease being so mild that a physician was not necessary; consequently a diagnosis was not made. In 1893 the disease occurred at 97 different points. From not one of these points did secondary cases occur after we disinfected the premises.

During January, 1894, there were 188 cases. There were 29 deaths, 7 of which occurred outside of the hospital and were of the hemorrhagic form. None of the 7 had been vaccinated, and but few of the 29 fatal cases had any evidence of successful vaccination.

In February there were 233 cases, with 55 deaths. These were largely among adults of the lodging-house class, who were greatly debilitated by dissolute habits and dissipation. The death rate in the unvaccinated was 50 per cent, and was very much greater among adults than among children. The disease was found in 93 different points, all of which were thoroughly disinfected.

During the month of March we have had 305 cases, with about 95 deaths. The vaccinal history is but a repetition of previous months. We have used since December 226,400 vaccine points. We use mostly the Chelsea and Marietta virus, and have uniformly good results from both. Vaccination is still being pursued with intelligence and vigor. We have made a house-to-house inspection with the aid of the police force of the city, looking after concealed cases. So far the police have not found any cases that have not already been announced, and it is demonstrated further that physicians report almost faultlessly contagious diseases of every kind.

This inspection will be continued until the city has been gone over three or four times. Our public schools have required vaccination for many years as one of the requirements of admission, and through a letter from me to his grace the archbishop an order was issued from him to all Catholic schools urging vaccination and cooperation with this department. All the children of public schools have been revaccinated, and of the parochial schools as well. With this thorough vaccination and rigid disinfection done by us, although the infection seems to be in the poorer quarters of the city rather widespread, yet we do not believe it possible that the disease can assume much greater proportions than at the present time. Indeed, we have every reason to believe that with this work and the approach of warmer weather the disease may be entirely abated before fall.

Very truly, yours,

ARTHUR R. REYNOLDS,  
*Commissioner of Health.*

#### INSPECTION OF VESSELS.

The following circular letter was sent to the local quarantine or health officers of the various ports located on the Great Lakes:

"TREASURY DEPARTMENT,  
"OFFICE SUPERVISING SURGEON-GENERAL MARINE-HOSPITAL SERVICE,  
"Washington, D. C., May 10, 1894.

"SIR: I would respectfully inform you that, owing to the prevalence of smallpox in the city of Chicago, medical officers of the Marine-Hospital Service have been stationed at that port for the purpose of vaccinating the crews of all vessels leaving the port of Chicago for other ports in the United States.



"To prevent the spread of the disease to other cities on the Great Lakes, Article I, paragraph 1, *bb*, Maritime Quarantine Regulations of the United States, requiring the inspection of all vessels from ports where smallpox is prevailing prior to their entry, should be enforced.

"Very respectfully,

"WALTER WYMAN,

*"Supervising Surgeon-General Marine-Hospital Service."*

CHICAGO, ILL., May 8, 1894.

GENERAL: Referring to telegraphic correspondence, I have to say that the inspection and vaccination of outgoing crews will begin this day at 12 m. Passed Assistant Surgeon Brooks will commence the inspection. A tugboat has been chartered, but I have only made a temporary arrangement with the Vessel Owners' Towing Association until further instructions are received from your office. Vessels in this port leave at all hours of the day and night, and an all-night service will be required. \* \* \*

In regard to vaccination of crews, this office has offered, by circular and otherwise, free vaccination ever since the beginning of the smallpox scare here, under paragraph 95 of the Regulations. Since the cases have appeared on two steamers in the lake passenger trade, an officer has visited the boats and vaccinated the crews whenever notified, but the extent of the river dockage, many miles in length, precludes their vaccination at the docks, except near the mouth of the river. As the vessels must all pass the mouth of the river, our inspections will be made opposite the barge office, just outside of the Rush Street Bridge. \* \* \*

The collector of customs by a timely circular, a copy of which I inclose, has cooperated in this quarantine duty very effectively.

Further details of the organization of the service will be given after the arrival of Passed Assistant Surgeon Woodward.

Very respectfully,

JOHN B. HAMILTON,

*Surgeon, Marine-Hospital Service.*

[Inclosure.]

OFFICE OF THE COLLECTOR OF CUSTOMS,

*Chicago, May 7, 1894.*

TO OWNERS AND MASTERS OF VESSELS:

The authorities of the United States charged with the execution of the quarantine law having been advised that certain ports upon the lakes are quarantined against vessels clearing from Chicago, upon the representation that smallpox is epidemic here, have decided, in the interest of vessel owners and masters themselves, that vessels shall not clear without a bill of health. Arrangements are making whereby an officer of the Marine-Hospital Service will be at the service of outgoing vessels for the purpose of mustering the crew, vaccinating the same where necessary, and of giving the necessary bill of health, which will enable the master to report at his destined port without inconvenience arising from any apprehension that he carries the infection. The examination will be made at or near Rush Street Bridge with as little impediment to vessels as possible, it being the purpose of the Marine-Hospital authorities to provide the boarding officer with a steam launch. The regulation is entirely in the interest of the public health and of the vessels, and the collector admonishes all of the interests involved that ready acquiescence with the regulations will be useful to all concerned.

MARTIN J. RUSSELL, *Collector of Customs.*

## REPORT OF THE CONFERENCE OF STATE BOARDS OF HEALTH.

A conference of representatives of the States immediately around Chicago was held in Chicago May 9 and 10. The alarming increase of smallpox in Chicago and the increasing danger of its spread to contiguous States was the reason for the conference. The State boards of health represented were Illinois, Indiana, Ohio, Michigan, and Wisconsin. The United States Marine-Hospital Service was represented by Surg. John B. Hamilton. After the conference had nearly perfected its propositions concerning what, in its judgment, should be done at once, the health commissioner of Chicago came in, and the propositions were again considered by all present. His name was signed, with the others, to the propositions agreed to as necessary to stop the spread of smallpox in a large city. The propositions adopted were as follows:

"1. The city should be divided into districts containing not more than 10,000 people.

"2. Each district should be placed under the supervision of a competent medical inspector with necessary assistants to (a) make a house-to-house inspection; (b) to successfully vaccinate within the shortest possible time all persons who have not been vaccinated during the outbreak, and that the first vaccination be within seven days; (c) to properly disinfect all houses and their contents where smallpox occurs.

"3. Necessary means and appliances for efficient disinfection of materials, premises, etc., should be provided as the exigencies of each district may require.

"4. Each case of smallpox should be immediately removed to a suitably constructed and properly equipped and officered isolation hospital.

"5. Except in extreme cold weather, hospital tents, as prescribed in the United States Army Regulations, floored and warmed, are preferable to the average hospital or private dwelling, and increase the chances of recovery of the patients. Cases of smallpox necessarily detained in their own homes should, with their attendants, be rigidly isolated during the period of danger, and physicians visiting such patients professionally shall be subject to such regulations as may be prescribed by the local health officer.

"6. Persons exposed to smallpox contagion should be immediately vaccinated or revaccinated, and kept under observation for not less than fourteen days from time of last exposure.

"7. It is the sense of this conference that where such measures are all enforced it will not be necessary for neighboring cities and States to exclude all persons who come from such city who are not protected against smallpox by vaccination, and to require disinfection of all baggage and merchandise capable of conveying smallpox infection."

A resolution relative to lake ports was adopted by the conference, also one relative to land quarantine, the two being as follows:

*"Resolved,* That no vessel plying on the lakes should be allowed to enter any port within the boundaries of our respective States without having on board, subject to inspection, a bill of health, duly signed by an officer of the United States Marine-Hospital Service.

*"Resolved,* That in the opinion of this conference strict quarantine by land is unnecessary at present, but the question may well be considered now whether any person from any city where smallpox continues to exist in epidemic form should be

allowed to stop in our States without having a certificate of vaccination within the past three years, and that, in case of establishment of quarantine, all passengers boarding trains should be informed that unless provided with vaccination certificates from proper authorities they will be liable to examination and revaccination at the State line."

On the invitation of the conference a meeting was called of the clothing and textile garment manufacturers of Chicago, which meeting appointed a committee to meet the conference. At that meeting the conference submitted propositions as follows:

"*Resolved*, That this conference respectfully informs manufacturers of clothing that, owing to the prevalence of smallpox in certain districts of this city, deep apprehension exists in regard to the possible infection of clothing and textile garments made or finished by persons or families living in said districts, some of whom are in close relation with the sick, either in the same house or having free communication therewith.

"That in view of these facts we further inform the said manufacturers that under the circumstances as above set forth we shall be obliged to recommend to our several State boards of health that no clothing or ladies' dresses or textile garments for sale be allowed to enter or be distributed within our respective States, except in accordance with the following measures:

"That an efficient daily inspection, with all that such inspection implies, of all places in which such goods are manufactured in the city of Chicago, be established and maintained under the direct supervision of the Illinois State board of health, to the end that no such articles from any infected locality shall be put upon the market for sale or shipment, or be otherwise distributed to the menace of the public health.

"The adoption of the foregoing measure will, in our opinion, measurably restore confidence and facilitate trade, but we desire to point out that the continuance of trade will finally depend on efficient general sanitary operations for the suppression of the disease."

#### SMALLPOX IN WASHINGTON, D. C.

Assistance was given to the District of Columbia by the detail of a medical officer to assist in suppressing the disease, and another officer was detailed to make observations as to the efficiency of the measures introduced and to keep the Bureau accurately informed. A portable steam disinfecting chamber which had just been constructed for the use of the Marine-Hospital Service was placed at the disposal of the city health officer. The operations of the Bureau are fully set forth in the following correspondence:

WASHINGTON, D. C., *October 26, 1894.*

SIR: The Commissioners of the District of Columbia beg leave to express to you their high appreciation of your courtesy in placing at the disposal of the health officer of the District the new steam disinfecting plant recently purchased for your department.

In view of the severe labors entailed upon the health officer and his assistants, they would be greatly obliged to you if you can further aid them by detailing one of the surgeons of your Service to assist the health officer in the present emergency.

I have the honor to be, with great respect, very truly yours,

JOHN W. ROSS,

*President Board of Commissioners, District of Columbia.*

The SURGEON-GENERAL MARINE-HOSPITAL SERVICE.

OFFICE OF SUPERVISING SURGEON-GENERAL, MARINE-HOSPITAL SERVICE,  
*Washington, D. C., October 27, 1894.*

SIR: I have the honor to acknowledge the receipt of your letter of the 26th instant, requesting the detail of one of the surgeons of this Service to assist the health officer in the present emergency. In accordance with this request, and with the approval of the Honorable Secretary of the Treasury, I have detailed P. A. Surg. H. D. Geddings for this purpose. I have further to state that Surg. Preston H. Bailhache, in charge of the marine hospital at New York, has been detailed for temporary duty in this Bureau with a view of keeping me informed of all matters connected with the present outbreak of smallpox. Both of these officers have had large experience, and Surgeon Bailhache will be my personal representative in communicating either with the health officer or the Commissioners.

Respectfully, yours,

WALTER WYMAN,  
*Surgeon-General Marine-Hospital Service.*

Hon. JOHN W. ROSS,  
*President Board of Commissioners, District of Columbia.*

WASHINGTON, D. C., *October 29, 1894.*

SIR: The Commissioners have the honor to tender you their acknowledgments for the courtesy of your prompt compliance with their request in detailing P. A. Surg. H. D. Geddings, of the Marine-Hospital Service, to assist the health officer in the present pestilent emergency, and to express to you their sincere appreciation of your willingness and evident desire to cooperate with them in the suppression of a possible epidemic.

Respectfully,

JOHN W. ROSS,  
*President Board of Commissioners, District of Columbia.*

WASHINGTON, D. C., *October 31, 1894.*

SIR: In obedience to your telegram of October 25, 1894, detailing me for special duty in this city as inspector to investigate and report upon a threatened invasion, of smallpox in Washington, D. C., I have the honor to report as follows:

Arriving here on October 26, I learned that the first case, resulting in death, occurred at No. 433 Fourth street NE., in the person of a child, the daughter of Mr. P. J. Coston, assistant attorney in the Interior Department, who contracted the disease, it is believed, while in Vermont or in the cars while en route home early in October. Following this case was that of Mary Mundel, a colored servant in the Coston family, who was removed to the quarantine hospital in the southeastern suburbs of the city, where she subsequently died. In quick succession the following cases were reported to Dr. William C. Woodward, health officer of the District, who had already begun necessary precautions to prevent the spread of the disease: Mary Thomas, colored, No. 243 Fourteenth street NE.; Mary Brown, colored, No. 202 D street NW.; Judge E. M. Rucker, No. 1104 Twelfth street NW.; William Owens, No. 302 Fourth street SE.; Judge James J. Parker, No. 1810 Fourth street NW.; George Anderson, No. 632 G street NW.; Samuel Mundel, colored, No. 433 Fourth street NE., and Charles E. Williams, colored, No. 915 Eighth street NW., which was reported to the health officer October 28, and is the last case up to date. All the above cases, except Mr. Coston's child, who died at its home, No. 433 Fourth street NE., were removed to the quarantine hospital as soon as reported to Dr. Woodward, who recognized the necessity of minimizing the foci of infection.

In tracing the course of the disease it was found that every case had its origin from direct or indirect communication with Mr. Coston's child or himself. The center of infection was in the office of the Assistant Attorney-General in the Patent Office, Interior Department, where Mr. Coston was employed as a law clerk. The disease was communicated through Mr. Coston to Messrs. Rucker, Parker, and Ander-

son, who were in adjacent rooms, and also to Mr. Owens, who met and conversed with Mr. Coston upon the street. Mr. Owens's case was malignant, and he died in hospital on the 30th.

The Commissioners of the District met immediately upon the announcement of the appearance of the disease in the city, which, unfortunately, was not recognized at first, having been diagnosed by the attending physicians as chicken pox, and established a smallpox hospital in the suburbs of the city, to which all cases were immediately removed. Commissioner Ross and Health Officer Woodward were untiring in their efforts to stamp out the disease, and orders were issued that all school children, the poor of the city, and inmates of the hospitals and jail should be immediately vaccinated. Subsequently the Patent and Census offices were closed and disinfected, and at this date all fear of the disease becoming epidemic has been materially allayed. Total cases in the District, 10; deaths, 3.

I also visited Hyattsville, Md., where a suspicious case had been reported. Upon investigation I found that Mr. Van Buren Norwood, a messenger in the Interior Department, had been in close communication with George Anderson the day previous to the appearance of the eruption in Anderson's case; but as he had been successfully vaccinated on the 25th instant and showed well-defined vesicular papules upon his arm, with enlargement of the glands in his axilla, the chance of immunity is greatly in his favor. All the members of the household with whom he came in contact had been vaccinated by Dr. G. A. Richardson, of Hyattsville, whom you had notified by telegraph regarding his case the day previous, so that in the event of the disease appearing no spread of the contagion is anticipated.

Very respectfully,

PRESTON H. BAILHACHE,  
*Surgeon, Marine-Hospital Service.*

To the SURGEON-GENERAL MARINE-HOSPITAL SERVICE.

WASHINGTON, D. C., November 6, 1894.

SIR: I have the honor to report that in accordance with your instructions I reported to Dr. W. C. Woodward, health officer of the District of Columbia, on October 26, to assist him in the increased duties devolving on him by reason of the appearance of smallpox in the District. Dr. Woodward made no formal assignment of duty to me, but desired that I should aid him in various ways as exigency required. The service was organized by the appointment of Dr. Beall as sanitary inspector, whose duty it was to visit all suspicious cases reported, and to decide on their nature. Those reported to be smallpox by Dr. Beall were immediately removed to the contagious disease hospital, under the charge of Dr. Nevitt, and the premises were then thoroughly disinfected under the supervision and direction of Dr. O'Malley, who had under his orders a corps of workmen for the purpose.

The disinfecting agents employed were the acid solution of mercuric chloride 1-500, and fumigation by sulphur dioxide, at least 3 pounds of sulphur being burned to the 1,000 cubic feet. The practice was to destroy all bedding and other articles incapable of disinfection by these methods, but with the arrival of the Kinyoun-Francis steam disinfecting chamber and sulphur furnace, which had been placed by you at the disposal of the health officer, the destruction of these articles was abandoned, and disinfection by steam in strict accordance with the interstate quarantine regulations has been substituted therefor.

It is proper here to note that Drs. Beall and O'Malley, with their respective corps of laborers, had been quartered in vacant buildings on the square at the corner of Eighteenth and B streets, NE., which establishment was isolated and officially designated as the "Quarantine Station." Here was constructed a closed shed, 50 by 25 feet, for the shelter of the disinfecting apparatus, and in this shed the steam chamber was located in permanent position, and the goods brought to the station in closed wagons, and on the completion of the disinfection were returned to the owners in wagons other than those bringing them. It is gratifying to report that

the two apparatus work admirably, and that with the steam chamber a temperature of 240° F. is quickly reached and easily maintained, and that by means of the air pump attached the perfect circulation and penetration of the steam are insured.

By request of the honorable the Secretary of the Interior I assisted Dr. Gibbes, of the Interior Department, in the fumigation of that building, and upon the further invitation of the Secretary made suggestions as to the fumigation of all mail matter leaving the Interior Department and the Census Office.

At this date it is gratifying to be able to report that the thorough preventive measures which have been taken by the health officer seem to have resulted in the suppression of the disease, and the relieving of the panic which at one time threatened to become general and uncontrollable. Vaccination has been generally practiced throughout the city, and it is believed that with the passage of a few more days without new cases the outbreak will be at an end, and that without ever having assumed epidemic proportions, which certainly is a triumph and one more vindication of the advance of sanitary science in its war on contagious and infectious diseases.

Very respectfully,

H. D. GEDDINGS,

*Passed Assistant Surgeon, Marine Hospital Service.*

The SURGEON-GENERAL MARINE-HOSPITAL SERVICE.

#### SMALLPOX IN THE UNITED STATES.

The following is a record of smallpox in the United States from January 1 to November 30, 1894, as reported to the Marine-Hospital Service:

Place.	Date.	Cases.	Deaths.	Remarks.
Arizona:				
Nogales.....	Apr. 12.....	1	.....	
Arkansas:				
Texarkana.....	Apr. 9-May 23.....	80	24	
California:				
Alturas.....	May 1-31.....	.....	1	
Cedarville.....	.....do.....	.....	1	
Connecticut:				
Bridgeport.....	Apr. 16-26.....	19	5	
.....do.....	May 1-31.....	5	4	
Danbury.....	.....do.....	1	1	
Manchester.....	Apr. 1-30.....	1	1	
Milford.....	Apr. 11.....	1	.....	
New Haven.....	Apr. 1-30.....	1	1	
Putnam.....	Apr. 16.....	1	1	
Waterbury.....	Feb. 20.....	1	.....	
Winchester.....	Jan. 1-31.....	.....	4	
District of Columbia:				
Washington.....	May 11-26.....	1	1	
.....do.....	Oct. 13-Nov. 22.....	16	5	
Georgia:				
Atlanta.....	Feb. 28.....	6	.....	5 varioloid.
Illinois:				
Chicago.....	Jan. 1-31.....	188	29	
.....do.....	Feb. 1-28.....	233	55	
.....do.....	Mar. 1-31.....	305	100	
.....do.....	Apr. 1-30.....	544	.....	
.....do.....	May 1-31.....	.....	253	
.....do.....	June 1-30.....	.....	171	
.....do.....	July 1-31.....	.....	51	
.....do.....	Aug. 1-31.....	.....	53	
.....do.....	Sept. 1-30.....	.....	31	
.....do.....	Oct. 1-31.....	.....	40	
.....do.....	Nov. 1-30.....	.....	51	
Downers Grove.....	Aug. 22.....	4	.....	
Genoa.....	.....do.....	1	.....	
Paris.....	.....do.....	4	1	
Indiana:				
Blackford County.....	May 22.....	1	.....	
DeKalb County.....	June 19.....	1	.....	
Fulton County.....	June 22.....	27	7	
Indianapolis.....	Apr. 19.....	2	.....	
.....do.....	Aug. 16-Sept. 17.....	2	.....	
Johnson County.....	May 22.....	1	.....	
Kosciusko County.....	Aug. 16-Sept. 17.....	4	.....	

*Smallpox in the United States—Continued.*

Place.	Date.	Cases.	Deaths.	Remarks.
<b>Indiana—Continued:</b>				
Lake County .....	May 22-June 7.....	1	.....	
Marion.....	Aug. 17-Sept. 17.....	1	.....	
Marshall County.....	May 22.....	4	2	
Pulaski County.....	do.....	3	.....	
Walkerton.....	Nov. 8.....	3	.....	
Wayne County.....	May 22-June 7.....	3	1	
Whitley County.....	Aug. 16-Sept. 17.....	1	.....	
<b>Iowa:</b>				
Dubuque.....	May 1-31.....	1	.....	
<b>Kansas:</b>				
Atchison.....	May 19.....	30	7	
<b>Kentucky:</b>				
Louisville.....	Jan. 1-May 8.....	17	1	
<b>Louisiana:</b>				
New Orleans.....	Jan. 6-27.....	4	1	
	Feb. 3-10.....	1	.....	
	Mar. 10-24.....	1	1	
	Apr. 14-21.....	1	.....	
	May 5-12.....	1	.....	
	June 2-9.....	1	.....	
<b>Maine:</b>				
Kennebec.....	May 19.....	2	1	
Penobscot.....	Apr. 25.....	1	.....	
<b>Maryland:</b>				
Baltimore.....	Apr. 28-May 5.....	6	.....	
	May 5-12.....	5	.....	
	May 19-26.....	3	.....	
	June 2-9.....	1	.....	
	Aug. 4-11.....	1	.....	
Charles County, near Glymont.....	Oct. 27-Nov. 22.....	3	.....	
<b>Massachusetts:</b>				
Boston.....	Jan. 1-Feb. 3.....	9	5	
	Feb. 17-Mar. 3.....	11	5	
	Mar. 3-31.....	24	6	
	Apr. 1-28.....	14	7	
	Apr. 28-May 5.....	5	.....	
Chelsea.....	May 19.....	2	.....	
	June 11.....	4	.....	
	June 26.....	1	.....	
Springfield.....	May 26-June 2.....	3	.....	
Worcester.....	June 7-14.....	1	.....	
	July 12-19.....	1	.....	
<b>Michigan:</b>				
Adrian Township.....	Nov. 23.....	1	1	
Bay City.....	May 7-June 6.....	5	2	
	June 19-July 25.....	1	1	
Berlin Township.....	do.....	2	1	
Cheboygan.....	Oct. 9.....	2	.....	
Clayton Township.....	June 28.....	2	.....	
Crystal Falls.....	Feb. 13.....	1	.....	
Danby Township.....	Nov. 17.....	5	.....	
Detroit.....	May 28.....	128	30	
	June 2-9.....	.....	1	
	June 18-30.....	18	4	
	July 1-31.....	.....	3	
	Aug. 4-25.....	.....	2	
	Sept. 22-29.....	.....	1	
	Oct. 13-Nov. 10.....	27	7	
Farmington Township.....	June 18-July 25.....	1	1	
Frenchtown Township.....	June 16-July 25.....	5	1	
Grand Rapids.....	May 16-June 6.....	4	.....	
Ishpeming.....	Mar. 13-June 6.....	2	.....	
Jackson.....	Apr. 27-June 6.....	4	2	
Kalamazoo.....	Mar. 24-July 25.....	2	.....	
Macomb Township.....	June 20-July 25.....	5	.....	
Manchester Township.....	Oct. 8-20.....	12	.....	
Marquette.....	May 2.....	1	.....	
Menominee.....	Jan. 27-July 25.....	6	3	
Muskegon.....	May 6-June 6.....	3	1	
Norville Township.....	Oct. 20.....	1	.....	
Otsego.....	Jan. 9-July 25.....	6	2	
Pontiac.....	June 19-July 25.....	2	.....	
Rives Township.....	Sept. 22.....	1	.....	
Royal Oak.....	Nov. 1.....	10	3	
St. Johns.....	Oct. 23.....	12	3	
Sebewa.....	Nov. 14.....	12	1	
Sturgis.....	May 11-July 25.....	10	4	
Ypsilanti.....	June 2-July 25.....	1	.....	

*Smallpox in the United States—Continued.*

Place.	Date.	Cases.	Deaths.	Remarks.
<b>Minnesota:</b>				
Belle Plains.....	Aug. 19.....	1	.....	
Brainerd.....	Nov. 15.....	1	.....	
Duluth.....	Apr. 21.....	9	2	
La Crescent.....	June 22.....	1	.....	
Red Clover Township.....	June 13.....	1	1	
St. Paul.....	Feb. 24.....	11	1	
	July 30.....	3	.....	
Two Harbors.....	June 5.....	1	.....	
<b>Missouri:</b>				
Mountain Grove.....	Aug. 1.....	18	2	
St. Louis.....	Jan. 6-Feb. 3.....	4	.....	
	Feb. 3-17.....	3	1	Died at quarantine, 16 miles below city.
<b>Nebraska:</b>				
Omaha.....	Feb. 1-28.....	1	.....	
	Mar. 24-31.....	1	.....	
	Apr. 1-30.....	2	.....	
	May 1-31.....	1	.....	
<b>New Jersey:</b>				
Newark.....	Apr. 28-May 12.....	2	1	
	July 21-Aug. 11.....	30	5	
	Aug. 25-Sept. 8.....	11	4	
	Sept. 8-29.....	12	2	
	Sept. 30-Oct. 20.....	6	.....	
<b>New York:</b>				
Albany.....	Apr. 1-30.....	.....	5	
	May 1-31.....	.....	3	
Binghamton.....	Mar. 17-24.....	3	1	
	Apr. 7-14.....	1	1	
Brooklyn.....	Jan. 1-Feb. 3.....	62	1	
	Feb. 3-Mar. 3.....	79	8	
	Mar. 3-31.....	116	15	
	Apr. 1-May 5.....	108	27	
	May 5-26.....	26	3	
	May 26-June 30.....	15	8	
	July 1-Aug. 4.....	7	3	
	Sept. 1-8.....	2	.....	
	Sept. 22-29.....	1	.....	
	Oct. 6-13.....	1	.....	
	Oct. 20-Nov. 3.....	2	1	
	Nov. 24-Dec. 1.....	1	.....	
Coxsackie.....	Mar. 1-31.....	.....	2	
	Apr. 1-30.....	.....	1	
Croton on the Hudson.....	May 1-31.....	2	.....	
Edgewater.....	.....do.....	2	2	
Evans.....	Sept. 1-30.....	1	.....	
Flushing.....	Apr. 1-30.....	1	1	
Long Island City.....	July 1-31.....	2	2	
Middletown.....	Aug. 1-31.....	1	1	
Mount Vernon.....	July 21-28.....	1	.....	
New Brighton.....	July 7-14.....	1	.....	
	July 24-31.....	1	.....	Varioloid.
Newburg.....	June 1-30.....	2	.....	
Newtown.....	Jan. 1-31.....	.....	2	
	Feb. 1-28.....	.....	1	
New York City.....	Jan. 1-31.....	89	13	
	Feb. 1-28.....	52	27	
	Mar. 1-31.....	126	21	
	Apr. 1-30.....	.....	54	
	May 1-31.....	.....	37	
	June 1-30.....	.....	24	
	July 1-31.....	.....	19	
	Aug. 1-31.....	.....	6	
	Sept. 1-30.....	.....	8	
	Oct. 27-Nov. 30.....	.....	11	
Onondaga.....	May 1-31.....	1	.....	
Perrinton.....	.....do.....	3	.....	
Port Jervis.....	Aug. 1-31.....	1	1	
	Sept. 1-30.....	1	1	
	Oct. 1-31.....	1	1	
Rochester.....	May 1-31.....	1	1	
	July 1-31.....	2	.....	
Salina.....	May 1-31.....	1	.....	
	June 1-30.....	.....	1	
Seneca Falls.....	May 1-31.....	9	.....	
	July 1-31.....	1	1	
Stony Point.....	May 1-31.....	1	.....	
Troy.....	Feb. 1-28.....	2	2	
Utica.....	.....do.....	1	1	
Worcester.....	July 14-21.....	1	.....	
White Plains.....	May 1-31.....	.....	1	
Yonkers.....	Feb. 1-28.....	.....	1	



*Smallpox in the United States—Continued.*

Place.	Date.	Cases.	Deaths.	Remarks.
Ohio:				
Cincinnati .....	Nov. 23.....	1	—	
Cleveland .....	May 15-19.....	2	—	
	June 23-30.....	1	1	
	Sept. 22-29.....	1	—	
	Oct. 8.....	1	—	Varioloid.
Deerfield.....	Nov. 5-Dec. 1.....	4	—	
Toledo.....	Feb. 1-Mar. 31.....	4	—	
	Apr. 6-27.....	3	—	
	May 4-11.....	—	1	
	May 27-June 1.....	2	1	
Pennsylvania:				
Bart .....	June 11.....	1	—	
Berwick .....	..... do .....	1	—	
Blandon .....	May 5-17.....	19	—	
California .....	June 18.....	1	1	
Carlisle .....	Jan. 1-9.....	1	—	
	June 13-July 7.....	6	3	
Carroll Township .....	Aug. 4-Oct. 6.....	4	—	
Dagus Mines.....	Aug. 9-Oct. 6.....	1	—	
Danville .....	Feb. 22.....	1	1	
Dorrencetown .....	Mar. 14-May 5.....	77	4	
Derry Township.....	May 5-17.....	1	—	
Friedensburg .....	..... do .....	2	2	
Fritztown .....	Jan. 18.....	1	—	
Gfbraltar .....	Jan. 6.....	—	—	Smallpox reported.
Gougiersville .....	Jan. 18.....	1	—	
Harrisburg .....	Mar. 21.....	1	—	
Hyde Park .....	Apr. 11-Oct. 6.....	11	1	
Jeannette .....	May 13-17.....	3	—	
Jerseytown .....	Jan. 18.....	2	1	
	Mar. 13.....	3	1	
	Apr. 4-May 5.....	1	1	
Lee .....	Apr. 11-May 5.....	16	—	
Lewisburg.....	Mar. 19-May 5.....	12	—	
Lewistown .....	Mar. 11-May 5.....	1	1	
	June 3-July 7.....	5	—	
Lidels Crossing.....	May 5-17.....	1	—	
McKeesport .....	Aug. 7-Oct. 6.....	1	—	
Mechanicsburg .....	Mar. 6.....	2	—	
Mocanagua .....	Mar. 14.....	1	1	
Mohns Store.....	Mar. 13.....	1	—	
Muncy .....	Apr. 11-May 15.....	1	1	
Philadelphia.....	Feb. 13.....	1	—	
	Mar. 6.....	1	—	
	Apr. 11-May 5.....	4	—	
	May 5-17.....	1	—	
	June 13-July 7.....	4	—	
	Aug. 4-11.....	—	1	
	Aug. 9-Oct. 6.....	8	1	
	Oct. 6-22.....	3	1	
	Oct. 22-Nov. 27.....	37	3	
Pittsburg.....	Feb. 13.....	5	—	
	Mar. 6.....	9	—	
Pottsville.....	Jan. 18.....	1	—	
Princetown .....	Mar. 19.....	1	—	
Pottstown .....	Feb. 13.....	1	1	
Reading .....	Jan. 1-26.....	5	—	
	Apr. 11-May 5.....	4	—	
Ridley Park.....	June 13-July 7.....	5	—	
	Nov. 17.....	1	—	
Riverside .....	Mar. 3.....	2	—	
Shamokin.....	Feb. 13-Mar. 6.....	1	—	
Shermansdale.....	Aug. 9-Oct. 6.....	1	1	
Shickshinny.....	Apr. 11-May 5.....	8	1	
Shillington .....	Jan. 10.....	1	—	
Striking Springs.....	Mar. 17.....	1	—	
Strasburg .....	July 9.....	1	—	
Sunbury .....	Apr. 9.....	3	—	
Towanda .....	Aug. 9-Oct. 6.....	1	—	
Tyrone Forges.....	Feb. 8.....	14	—	
Walnuttown.....	May 12-17.....	1	—	
Washingtonville.....	May 19.....	1	—	
West Hempfield.....	May 5-17.....	1	—	
Wilkinsburg .....	Jan. 17.....	3	—	
	Jan. 23-Feb. 13.....	2	—	
Williamsport.....	Feb. 2.....	2	—	
Wilkinsburg .....	Jan. 1-19.....	2	—	
Rhode Island:				
Providence .....	Apr. 28.....	1	—	
	May 5.....	2	1	
	May 7.....	1	—	

*Smallpox in the United States—Continued.*

Place.	Date.	Cases.	Deaths.	Remarks.
<b>Rhode Island—Continued:</b>	May 15.....	12	1	
Providence.....	May 26.....	1		
	May 26-June 2.....		1	
<b>Tennessee:</b>				
Chattanooga.....	Feb. 7.....	4		
	Mar. 31.....	4		
Memphis.....	Feb. 14.....	3		
Nashville.....	Jan. 8.....	5		
	Jan. 14-27.....	5	1	
	Feb. 3.....	2		
	Feb. 5.....	2		
<b>Texas:</b>				
El Paso.....	May 4.....	1		
San Antonio.....	Mar. 28.....	1		
Victoria.....	Feb. 15.....	1		
<b>Vermont:</b>				
Pomfret.....	Oct. 20-Nov. 14.....	2		
<b>Wisconsin:</b>				
Allouez.....	Apr. 21.....	2		
Beaver Dam.....	Nov. 5-26.....	1	1	
Cascade.....	July 1-30.....	1		
Clyman Township.....	May 30-June 9.....	3	1	
Dover.....	Sept. 10-24.....	2		
Ellsworth.....	Oct. 8-22.....	1	1	
Fort Howard.....	Feb. 14.....	4		
Franklin.....	Oct. 22-Nov. 19.....	17	3	
Granville.....	July 30-Aug. 20.....	1		
Green Bay.....	Mar. 23.....	1		
Greenfield.....	July 30-Aug. 20.....	1		
	Aug. 20-Sept. 10.....	2	1	
	Nov. 19.....	24		
Janesville.....	Jan. 30.....	1		
Juda.....	July 1-30.....	5		
	July 30-Aug. 20.....		1	
La Crosse.....	Sept. 10-24.....	1		
Lake.....	Aug. 20-Sept. 10.....		2	
Liberty.....	Sept. 24-Oct. 28.....	1	1	
Madison.....	July 3-Aug. 20.....	1		
Manitowoc.....	Apr. 21.....	3		
	May 30.....	2		
Menesha.....	Apr. 21.....	4	1	
	May 30.....	1		
Merrimac.....	May 30-June 7.....	4	1	
Milwaukee.....	Jan. 30.....	1		
	Mar. 1-31.....	1		
	Apr. 21.....	1		
	May 30.....	7		
	June 9-30.....	11	1	
	July 1-30.....	55	6	
	July 30-Aug. 20.....	78	22	
	Aug. 18-25.....	82	10	
	Aug. 25-Sept. 1.....	36	6	
	Sept. 1-29.....	178	39	
	Sept. 30-Oct. 6.....	44	13	
	Oct. 6-Nov. 3.....	224	82	
	Nov. 3-Dec. 1.....	114	38	
Milwaukee Township.....	Sept. 24-Oct. 8.....	1		
	Oct. 8-Nov. 19.....	7	1	
Mitchell.....	July 1-30.....	2	1	
Muskegon.....	Oct. 22-Nov. 19.....	7	3	
Portage.....	Feb. 14.....	1		
Raymond.....	Aug. 20-Sept. 10.....	1		
	Nov. 27-30.....	1		
Spring Prairie.....	Oct. 22-Nov. 19.....	4	1	
Superior.....	June 16-23.....	1	1	
	Mar. 23.....	1		
Two Rivers.....	Sept. 10-24.....	2	1	
	Sept. 24-Oct. 8.....	2		
	Oct. 22-Dec. 10.....	9	1	
Waukesha.....	May 30.....		1	
Wausau.....	June 1-9.....	1		
	July 1-30.....	6	1	
	July 30-Aug. 20.....	1		
	Aug. 20-Sept. 10.....	1	1	
	Sept. 24-Oct. 8.....	1		
Wauwatosa.....	July 30-Aug. 20.....	1		
	Aug. 20-Sept. 10.....	3		
	Sept. 10-24.....	9	2	
	Sept. 24-Oct. 8.....	18	3	
	Oct. 8-19.....	18	3	
Woneewec.....	Oct. 8-22.....	6		

## CHINESE PLAGUE.

The plague was probably imported into Canton in 1894, by way of Thibet, from northern India. From Canton it was readily conveyed to Hongkong by persons who removed from one city to the other while actually suffering from the disease or during the process of incubation. The steamer journey between the two places occupies only about eight hours. During the height of the epidemic it was almost a daily event for deaths to occur en route.

In considering the causation of the disease account must be taken of the prevalence of insanitary conditions in Chinese towns. A prolonged period of drought preceded the outbreak. The rainfall in south China during the winter is small, but during the month preceding the outbreak it was exceptionally so. This absence of rain caused an impure water supply and a more than usually insanitary condition of houses and drains. The temperature was also abnormally low, and, consequently, favorable to the development of the disease. All the fostering conditions for an epidemic were therefore present.

In Yunnan pigs, goats, rats, and other animals die in great numbers before the disease attacks the human subject. In Canton rats were the only animals observed to be affected.

No absolutely reliable estimate can be reached as to the mortality, but the total number of deaths was probably 40,000. One report gives the number of coffins passing through one of the city gates in one day at 170. Another gives 1,000 coffins carried out by one gate in forty days. Although all classes suffered, certain conditions of life appeared to confer immunity. The greater number of persons attacked were women and children, especially female children, or those living mostly indoors. Persons living upstairs were less liable to the disease than those living on the ground floor. The boating population, who live and sleep on the water, enjoyed almost complete immunity. In the foreign quarter of Canton, the population of which is about 300—Europeans and Americans—not a single case occurred among human subjects or animals.

The action of the Bureau, in view of the prevalence of plague in China, consisted in placing a sanitary inspector on duty at Yokohama, where all vessels bound from ports in the Orient, coming to the United States, make harbor. The attention of the quarantine officers on the Pacific Coast was specially directed to the existence of this disease in Asia, and they were directed to enforce the quarantine regulations rigidly against it.

The following report upon the nature of the plague was received by the Bureau from Professor Kitasato:

## PRELIMINARY NOTICE OF THE BACILLUS OF BUBONIC PLAGUE.

[By Prof. S. Kitasato.]

HONGKONG, July 7, 1894.

Early this year (1894) an epidemic of bubonic plague broke out in the south of China and Canton, from which city the disease was imported into the neighboring island of Hongkong, where it has prevailed from the beginning of May until now.

The Imperial Japanese Government sent a commission to Hongkong in order to study the plague, especially as regards its bacteriological character and its pathological and clinical features. The pathology and medicine were the special study of Professor Aoyama and the bacteriological part received the care of the author. Having left Japan 5th of June, 1894, we arrived at Hongkong on the 12th of the same month. Here Dr. Lowson, acting superintendent of the Government city hospital, put everything needful at our disposal in the most friendly spirit. A room in the Kennedy town hospital (one of the plague establishments) was given to us, and there we began our work on the 14th of June last.

On that day we were able to see a post-mortem examination performed by Professor Aoyama. I found numerous bacilli in the bubo (in this case a swelling of the inguinal glands), in the blood of the heart, in the lungs, liver, spleen, etc. As the post-mortem examination was made eleven hours after death, I had still doubts about the true significance of what I found. I therefore made a cultivation and inoculated a mouse from a small piece of the spleen. On the same day I took, with all due precautions, some blood from the finger tips of a patient who had the disease in a very bad form, with a temperature of 40.5° C., swelling of the axillary glands, etc. Under the microscope I found bacilli with capsules, the poles of which were stained much deeper with aniline dyes than the middle part. This gives them a great likeness to the bacilli of chicken cholera (*bacillus cholera galinarum*). On the next day all the serum cultivations which were prepared in the incubator from the different organs of the body and of blood from the finger tips showed a growth of microorganisms which, under the microscope, were not to be distinguished from those which we found in the blood and in the interior of the bubo at the first post-mortem examination. The bacilli differed only by being a little longer and staining easier in the middle than those taken from the blood. With these cultivations I inoculated subcutaneously mice, guinea pigs, rabbits, and pigeons.

The mice which were inoculated on the first day with a piece of spleen and some blood from the finger tips died in two days' time, and at the post-mortem examination upon them I found oedema round the place of inoculation, the same bacilli in the blood, in the internal organs, and in the oedematous part around the place of inoculation.

All animals which had been inoculated with the cultivations (pigeons excepted) died after periods extending from one to four days, according to the size of the animal. The same state of the organs after death and the same bacteriological observations always obtained as in the case of the mice previously referred to. I propose to give further details about my experiments on animals at a later time.

Every day I took blood from many plague patients and examined it, and almost every time I found the bacilli as above described, sometimes in great numbers, sometimes only a few in number, so that many glass slides had to be examined to find good specimens.

On the other hand, these same bacilli were to be found at every post-mortem examination (of which we had upward of fifteen) in great quantity in the bubonic swellings, in the spleen, the lungs, the liver, in the blood contained in the heart, in the brain, intestines; in fact in all internal organs without exception; and every cultivation from any particle of these parts invariably produced the same bacilli.

Suppose the contents of a bubo or a small piece of the spleen is rubbed on the cover glass, and the latter, after having been stained, is examined under the microscope (one-twelfth inch oil immersion, Zeiss), bacilli will be discovered in the form found in pure cultivation (Reinkultur). In the spleen especially the bacilli are aggregated in heaps. Bacilli from bubonic swellings and from other internal organs are more easily stained with aniline dyes in their middle part than those taken from the blood, but any serum cultivation prepared from them produces the same form of bacillus.

In any case where cultivations are prepared from parts of any internal organs or from the blood taken from the finger tips, with careful observation of all due precautions, pure cultivations (Reinkultur) of one and the same bacillus are always obtained; therefore the most intimate connection must exist between the bacillus and the disease.

Particulars about the observations at the post-mortem examinations will be given later on by my colleague, Professor Aoyama. Generally it may be said that the parts in the neighborhood of the bubo are oedematous, of a color between black and red, infiltrated with gelatinous exudation, and that the spleen is enlarged. Both phenomena are to be found in inoculated animals in which the parts round the place of inoculation present the same oedematous exudations as we find in human beings.

I shall now give a few short notes about the bacillus.

The bacilli are to be found in the blood, in the buboes, in the spleen, and in all other internal organs of the victims of the plague. The bacilli are rods with rounded ends, which are readily stained by the ordinary aniline dyes, the poles being stained darker than the middle part, especially in blood preparations, and presenting a capsule, sometimes well marked, sometimes indistinct. The bacilli found in the spleen are best stained by a solution of methyl blue. I am at present unable to say whether or not "Gram's double-staining method" can be employed. I shall report upon this on a future occasion.

The bacilli show very little movement, and those grown in the incubator in beef tea make the medium somewhat cloudy. The growth of the bacilli is strongest on blood serum at the normal temperature of the human body ( $37^{\circ}\text{C}$ ). Under these conditions they develop luxuriantly, and are moist in consistence and of a yellowish-gray color; they do not liquefy the serum. On agar-agar jelly (the best is good glycerin agar) they also grow freely. The different colonies are of a whitish gray color, and by a reflected light show a bluish glance; under the microscope they appear moist and in rounded patches with uneven edges. At first they appear everywhere as if piled up with "glass wool;" later on as if having dense, large centers. If a cover-glass preparation is made from a cultivation on agar-agar, and, after having been stained, is observed under the microscope, long threads of bacilli are seen, which might, by careless inspection, be mistaken for a coccus chain, but are recognized with certainty as "threads of bacilli" under closer observation.

The growth on agar gelatin is similar to that on agar-agar. In a puncture cultivation, at the ordinary temperature after a few days, they are found growing as a fine dust, in little points alongside the puncture, but with very little growth on the surface. Whether these bacilli are able to liquefy ordinary gelatin or not I am at present unable to decide, as the temperature of Hongkong ranges so high that the employment of simple nutritive gelatin is out of the question. I shall give further information on this question later.

On potatoes at a temperature of from  $28^{\circ}\text{C}$ . to  $30^{\circ}\text{C}$ . there was no growth after ten days' observation, but at a temperature of  $37^{\circ}\text{C}$ . the bacilli developed sparingly after a few days; they were whitish-gray in color and exsiccated.

As mentioned before, the bacilli grow best at a temperature of from  $36^{\circ}\text{C}$ . to  $39^{\circ}\text{C}$ . At how low a temperature growth is possible I am unable at present to state.

So far I have been unable to observe the formation of spores.

*Experiments on animals.*—Mice, rats, guinea pigs, and rabbits are susceptible to inoculation. If these animals are inoculated with pure cultivations, or with the blood of a plague patient in which the bacilli have been observed, or with the contents of a bubo, or with pieces of internal organs, or even with the contents of the intestine, they begin to become ill in from one to two days, according to the size of the animal. Their eyes become watery, they begin to show disinclination for any effort, later on avoid their food and hide quietly in a corner of the cage. The temperature rises to 41.5° C., and with convulsive symptoms they die in from two to five days.

I must observe that in Hongkong I could only obtain small guinea pigs (weight from 100 to 150 grams) and small rabbits (from 200 to 250 grams). If I could have experimented upon larger animals it is possible life would have been somewhat prolonged beyond the periods mentioned above.

The parts around the point of inoculation are infiltrated with a reddish gelatinous exudation, the spleen is enlarged, sometimes there is a swelling of the lymphatic glands, and in all the organs the bacilli are found. The results found after death in animals are very similar to those found in anthrax and in *œdema malignum*.

Pigeons do not appear to be susceptible to the influence of the bacilli.

I made experiments by feeding some mice and guinea pigs with pure cultivations of the bacillus and with small pieces of the internal organs. The result was such animals perished in a few days under the same symptoms as those which had been inoculated. In all the internal organs of animals so destroyed I found the bacilli.

With the dust of dwelling houses from which the plague-stricken had been removed I made several experiments upon animals. Some of the animals died from tetanus. In one case only a guinea pig died with plague symptoms, and in this animal the same bacilli were found in the internal organs as in those of plague patients who had succumbed.

These experiments with the dust from infected houses I shall certainly continue.

Many rats and mice at present die spontaneously in Hongkong. I examined some of them. In the internal organs of a mouse I discovered the same bacilli.

#### POWER OF RESISTANCE OF THE BACILLI TO PHYSICAL AND CHEMICAL AGENCIES.

*Experiments with desiccation.*—The contents of a bubo in which the bacilli were present in great numbers were wiped over cover glasses (perfectly cleansed by heat and alcohol), and some of the cover glasses were dried in the air of a room at a temperature ranging from 28° C. to 30° C. Others I exposed directly to the sun's rays, and from among them, after an exposure of one, two, and three hours (up to six days), I removed some parts, putting such portions in beef tea and placing them in the incubator. Those which had been standing in the room from one to thirty-six hours showed a pretty good growth in the incubator, but those which had been in the room for more than four days were unable to show any growth even after one week's incubation. Those exposed directly to the sun were all destroyed after from three to four hours.

Further cultivations on serum were treated exactly like the contents of the bubo, with very similar results.

*Experiments with heat.*—Beef-tea cultivations which had been heated for thirty minutes in a water bath up to 80° C. were destroyed. At 100° C. in the vapor apparatus they were destroyed in a few minutes.

*Chemicals—Carbolic acid.*—To every 10 cubic centimeters of beef-tea cultivations which had been standing in the incubator from two to three days and had grown well, carbolic acid was added of a strength of 0.5 per cent of the whole, 0.75 per cent, and 1 per cent. They were afterwards well shaken and left at the ordinary temperature of the room. Of each of these cultivations a few drops were brought into sterilized beef tea after one, two, and three hours and left in the incubator with the following results:

Those cultivations which contained 0.5 per cent and 0.75 per cent carbolic acid and had been left standing in the room for one hour grew in the incubator after two days. A cultivation, however, of 1 per cent, which had been left standing for only one hour, did not grow even after one whole week in the incubator.

Cultivations that had been mixed with only 0.5 per cent of carbolic acid and had been left standing for more than two hours did not show growth after one week in the incubator, neither did the other cultivations containing a greater percentage produce any growth.

*Quicklime.*—Experiments were made with quicklime in exactly the same way as with carbolic acid, with the following results:

Those beef-tea cultivations which contained 0.5 per cent of quicklime grew sparingly after two hours; those containing 1 per cent of quicklime ceased to grow. Cultivations which had been mixed for more than three hours, even if containing only 0.5 per cent of quicklime, showed no growth.

Further experiments with chemicals should have been made, but as my time was extremely limited I had to leave them to a future time.

The following is a short review of "the plague" generally:

History shows us that plague epidemics existed in the fourteenth century both in Asia and Europe, and thousands of human beings perished. Since then, from time to time, now here, now there, an epidemic has appeared, and until lately the disease almost seemed to have vanished from the face of the earth. This, however, was not so. In China it has existed to this day, especially in Yunnan, where it occurs every year in an endemic form. From the latter place it was imported into Canton, and from Canton, for the first known time, has reached Hongkong.

This recent outbreak has given us opportunity for studying this disease—a cause of mystery for centuries—with the means which modern science places in our hands.

The principal symptoms of the disease now ravaging Hongkong are the following: After the period of incubation, which lasts from three to five days (possibly a little longer, and some doctors say as long as eight days), the patient complains of high fever and swelling of one or more of the lymphatic glands (buboes). These swellings may antedate, coincide with, or follow the rise in temperature, and are accompanied by severe pain. The most common gland affected is one of the femoral chain, next an inguinal, next axillary, and sometimes a cervical gland is affected. The tongue is coated with a grayish-white or dark-brown heavy fur. There is commonly headache, also delirium; the heart is generally affected; occasionally vomiting and diarrhea are present (not frequently the last two conditions, which are generally forerunners to a fatal issue).

In patients who survive the onset of the disease the temperature does not fall until a week has passed, and convalescence is a slow process.

Sex and age make no difference in the disease; men and women, infants and old people, are attacked equally.

If in such a case as described the blood be examined, the before-described bacilli, in greater or lesser numbers, will be found present (in 30 patients I obtained 25 positive results, and 2 of my subjects who were without bacilli were subsequently proved not to be suffering from the plague at all).

As indicated before, it is not always an easy matter to demonstrate the presence of the bacilli directly in the blood of many patients; they are present sometimes in such small numerical strength that only after examining several slides can they be discovered. In order to be safe, not only must the blood of a suspected plague patient be examined, but a cultivation should also be made.

In the buboes the bacilli always occur in the form of pure cultivations, but it is obviously not always easy to procure a specimen of 'bubo contents from the living subject.

The question arises, Is it possible to make a diagnosis of bubonic plague from examination of the blood of the suspect? In many cases, yes! But a good deal of bacteriological practice is required, or such diagnosis is impossible.

It is a well-known fact that so far, among infectious diseases produced by bacilli, only two micro-organisms have hitherto been found in human blood, viz, the bacillus of anthrax and the spirochæticæ of relapsing fever (we do not include the plasmodia of malaria). Here in the blood of human beings suffering from bubonic plague we have a new bacillus possessing the following qualities:

(1) This bacillus occurs in the blood, in buboes, and in the internal organs of the plague stricken only.

(2) This bacillus is not to be found in any other infectious disease.

(3) With this bacillus it is possible to produce in animals the identical symptoms which the disease presents in human beings.

From this evidence we must come to the conclusion that this bacillus is the cause of the disease known as the bubonic plague; therefore the bubonic plague is an infectious disease produced by specific bacillus.

What are the channels by which these bacilli enter the human body? We may suppose that they have three principal channels of entrance: By respiration, through an external wound, and by the intestinal tract. Examples of the first two ways, of which I shall speak later on, are abundant. Examples of the last-mentioned way are not positive so far, but, considering that we discovered the bacilli in the intestinal canal and experiments on animals prove that feeding alone produces definite results, the concession must be made that the third is a possible method of infection.

Most of the cases of bubonic plague occur among the Chinese, a few other nationalities excepted.

Whoever has looked into a Chinese dwelling in Taipingshan is at once persuaded that here is a suitable hunting ground for the plague bacillus. The houses are so filthy that they are unfit for human habitation.

What means are to be employed against the plague? Preventive measures, general hygiene, good drainage, perfect water supply, cleanliness in dwelling houses, and cleanliness in the streets. As soon as an epidemic breaks out the sick must be perfectly isolated. The infected dwellings, before the household things are removed, have to be disinfected by 2 per cent carbolic acid solution or by a solution of quicklime in a correct way. Afterwards, wearing apparel, linen, bedding, etc., should be specially disinfected by a steam disinfecter for one hour at a temperature of 100° C. Should a steam disinfecter not be available the things ought to be exposed directly to the sun's rays for several hours. Articles unfit for use ought to be burned. Dwelling houses thus emptied should be cleaned over again with quicklime or carbolic acid. The faces should be disinfected carefully with quicklime. Dead bodies covered with quicklime are either to be burned or to be buried at least 3 meters from the surface. Mice and rats which have died spontaneously in dwelling houses should be carried away with proper precautions. After a patient has apparently recovered he must be kept apart from the healthy community for a period of a month, for during convalescence the bacilli may be discovered in the blood from three to four weeks after all symptoms have ceased.

Individuals ought to keep away from plague patients and infected houses and be careful about their solid and liquid nourishment.

These measures have been generally in force during the epidemic in Hongkong.

The question as to whether immunity against the bacillus of plague is possible on the lines practiced against many other bacillary infectious diseases remains at present an open one. I shall study it thoroughly later on and in an exhaustive manner.

All that I have described above must be regarded only as a short preliminary notice. The results of extensive study on the subject of the plague bacillus will be published by me at a later time.

Before I conclude this notice, I beg to tender my heartiest thanks to the colonial government at Hongkong, to all the medical men here, and especially to Dr. Lowson for his kind assistance.



## LEPROSY.

Leprosy was made the subject of special consideration at the Congress of American Physicians and Surgeons held in Washington, D. C., May, 1894. The matter of national control of the disease was considered, and the following address relating thereto was delivered, by invitation.

Following the discussion a resolution was adopted requesting Congress to provide for the appointment of a commission to investigate the prevalence of leprosy and suggest means for the control of the disease.

## NATIONAL CONTROL OF LEPROSY.

[By Walter Wyman, M. D., Surgeon-General United States Marine-Hospital Service.]

In the few minutes allotted to me I propose to discuss the relations of the National Government to the subject of the control of leprosy.

In October, 1889, the American Public Health Association, at its meeting in Brooklyn, passed a resolution calling upon the Marine-Hospital Service and the State board of health of Florida, and all quarantine commissioners of ports having intercourse with Cuban ports, to exercise the same vigilance with regard to leprosy that is already observed in the case of yellow fever during what is known as the quarantine period. In accordance with this request, a circular was issued by the Surgeon-General of the Marine-Hospital Service, approved by the Secretary of the Treasury and the President, December 23, 1889, forbidding entry of any vessel to any port of the United States without a certificate from the proper officer that no case of leprosy was found on board said vessel, or in case one had been found, that it had been removed from the vessel and detained at the quarantine station; with a further provision permitting the departure of the detained leper on outgoing vessels bound to the foreign country from which the leper last sailed.

The new quarantine regulations of the Treasury, promulgated April 26, 1894, provide as follows:

"Vessels arriving at quarantine with leprosy on board shall not be granted pratique until the leper with his or her baggage has been removed from the vessel to the quarantine station.

"No case of leprosy will be landed.

"If the leper is an alien passenger, and the vessel is from a foreign port, action will be taken as provided by the immigration laws and regulations of the United States.

"If the leper is an alien, and a member of the crew, and the vessel is from a foreign port, said leper shall be detained at the quarantine at the vessel's expense until taken aboard by the same vessel when outward bound."

Furthermore, the immigration law of the United States, providing for the medical inspection of immigrants, forbids the landing of immigrants afflicted with a loathsome or contagious disease, thus furnishing an additional protection against the importation of cases of leprosy. These laws and regulations have, in a measure at least, been effective. I am informed by the sanitary inspector stationed at Havana that several persons afflicted with leprosy desiring to immigrate to Florida have been debarred from so doing by reason of these restrictions.

National control of leprosy within the United States has been frequently advocated, particularly by State and municipal boards of health, when finding such cases upon their hands and desirous of being relieved of their care. The arguments for such control, of course, are based upon the presumption of the contagiousness of the disease (even though moderately contagious) and also upon the claim that where no segregation of cases or no supervision of cases not colonized is enforced, the disease gradually increases in prevalence, and that where segregation or colonization has been enforced the disease has been made to disappear.

One reason alleged for a national establishment is the fact that in some States the disease is of so rare occurrence that the erection of a special hospital or place of confinement for lepers is scarcely justified, and it is desirable, therefore, that there should be established an asylum to which any of the States might send these unusual but highly objectionable patients. It is further urged that by reason of the difficulty of properly caring for lepers, and because of the uneasiness and excitement that would prevail in cities or localities should the presence of a leper be announced, the health authorities themselves are tempted to conceal the cases from the knowledge of the public. Thus, if there is anything in the doctrine of contagiousness whatever, the local authorities themselves may directly aid in the extension of the disease. If a national asylum were provided there would be no motive for concealment. Granted that the danger of contagion is small; granted that, in the language of another, a case of leprosy within a family should be regarded with less concern in its relation to the health of the remaining members than a case of tuberculosis; granted that the disease spreads chiefly among the lower classes; nevertheless, in the movement which is now only near the starting point, but which promises to be a controlling movement, and which will mark the close of the present century and the beginning of the next, so far as medical science is concerned, as distinctly as any other evidence of progress in the healing art (I refer to the settled resolution to exterminate every contagious disease), it would appear to be incumbent on the profession to leave nothing undone to exterminate this, together with other communicable diseases.

Now, with regard to national control, there are two considerations involved: First. Does the right of national control exist? Second. If it does, how may that right be best exercised?

Concerning the first consideration, I find a difference of opinion among eminent men with whom I have conversed, based upon their different views regarding the Constitution of the United States.

A strict constructionist will inform you that the United States Government can only legislate in accordance with powers expressly delegated by the Constitution, and that the general-welfare clause of the Constitution applies as a qualifying clause to the specified prerogatives—that the latter are only granted when necessary for the general welfare.

The States, however, may make any laws which are not forbidden by the Constitution of the United States. This view would discourage the attempt to establish a national leper hospital by the General Government, but it is claimed that the end might be met by one State establishing a hospital and being willing to receive into it the lepers consigned from other States, their expenses being paid by the latter, as has been done in a number of instances with regard to jails and penitentiaries.

Those who take a different view of the Constitution assert that it is quite within the province of Congress to appropriate a sufficient sum to establish a national leper hospital, though the necessity for it must be plainly shown. They call attention to laws already passed to which objections similar to those mentioned above were urged.

An outline of a bill for this purpose might be stated as follows:

“An act appropriating a sufficient sum to establish a national leper hospital and authorizing the national officer in charge thereof to receive, or to proceed and take possession of, a leprosy patient upon the consent of the proper authority of the State. There should be a corresponding act passed by the legislature of the State conferring power upon some official—preferably the governor, with the advice of the State board of health—to respond to such a requisition. It should be made the duty of the Government officer in charge of the institution, upon hearing of the presence of a leprosy patient, to request such authorities of the State as have been designated for that purpose by the legislature to turn over said patient to said officer for the purpose of being transferred to said hospital; and the Congressional act should also provide that the officer in charge of the institution should make such regulations for the treatment and confinement of the patient as the nature of the case demands.”

It will be observed that an act of this nature would still practically leave the determination of the disposition of the patients within a State to the State itself, and leave to the discretion of the governor and the State board of health whether in a given instance the leper should be segregated. The necessity of this discretion is evident from the fact that special circumstances might so surround a given patient as to make it cruel or unnecessary to remove him. At the same time it would provide for the proper removal and proper care of those who are not surrounded by such circumstances. To the objection that some States might fail to thus legislate or avail themselves of the privilege of a national institution, it may be urged that in this event the law of February 15, 1893, which permits the making of regulations to prevent the spread of contagious diseases from one State to another, could be brought into exercise to prevent lepers leaving such a State. It is believed that this State would in time have a physical demonstration of the necessity of taking advantage of the national institution or of making equal provision itself.

This is a brief outline, which it might be necessary to modify.

To determine whether such a bill would pass it would be necessary to introduce it, but, as preliminary to its passage, its necessity would have to be demonstrated to Congress. For this purpose, and that Congress may be assured that the medical profession and sanitary officers had not acted upon insufficient premise, it is suggested that a leprosy commission should be appointed, of three or five members, to make report upon the prevalence of leprosy in the United States and the necessity and proper method of its control.

A preliminary bill might be introduced empowering the President to appoint such a commission; and, as the success of the bill would be enhanced if it called for no additional appropriation, there might be included a provision setting aside a portion of what is known as the "epidemic fund," to meet the expenses of this commission.

Whether a national leper hospital would be the result of this action or not, a commission of this character would cause a sense of relief to the people of the United States, whatever its conclusions, either affirmative or negative, as to such establishment.

As for myself, I believe that leprosy should be under national control.

#### BUREAU OF PUBLIC HEALTH.

During the year several bills have been introduced in Congress looking to the establishment of a bureau of public health, none of which were favorably reported by the House committee. Two bills were reported on adversely by the Secretary of the Treasury.

Following is the letter of the Acting Secretary of the Treasury upon the merits of a bill "To establish a bureau of public health within the Treasury Department of the United States:"

TREASURY DEPARTMENT,  
*Washington, January 3, 1894.*

SIR: I have the honor to acknowledge the receipt of the communication of the Committee on Interstate and Foreign Commerce of the 19th ultimo, inclosing bill (H. R. 4833) "To establish a bureau of public health within the Treasury Department of the United States," and requesting me to furnish the committee suggestions touching the merits of the bill and the propriety of its passage. In reply I have to state that in my opinion the objects to be attained by the passage of this bill are already met, or may be attained, under the act of Congress passed February 15, 1893, and under present executive organization. A careful perusal of the bill will show that it is to all intents and purposes a reenactment of the act of February 15, 1893, with the addition of a commission of fifteen members and an executive committee thereof consisting of five members. This addition does not commend itself to me, either on the ground of economy or of practical utility. The appointment of so many commis-

sioners, with their compensation and other expenses necessarily to be incurred, will involve a very considerable expenditure, and in my opinion the calling together of so large a body for the purpose of devising quarantine rules and regulations and the placing of the executive power of such a body in the hands of an executive committee of five, only one member of which is by reason of his official position naturally connected with quarantine affairs, together form a plan cumbrous as compared with present methods and organization, and which in practice would be at best but experimental, and in my opinion less successful than the plan and organization which now exist. In general it may be said that what is offered as new in this bill does not add to quarantine efficiency; and the features in the bill which are really effective are already provided for in existing statutes.

It bears upon its face the evidence of having been prepared either without a full knowledge of the advance that has been made in national quarantine under the law of February 15, 1893, or with the intent to ignore the existing law and regulations.

To refer to the bill in detail, a first objection is to the title, namely: "A bill to establish a bureau of public health within the Treasury Department of the United States." This title is misleading, as nowhere within the sections which follow is there any provision for the establishment of an actual bureau of public health. The bill relates almost exclusively to matters pertaining to quarantine. This is a matter of importance, since much of the support which might be given among sanitarians and physicians of the country to whom appeals may have been made would be given on the strength of its title. The bill does not establish a bureau of public health as that term is generally understood, or if it does, then a bureau of public health already practically exists in the Marine-Hospital Service, which is now exercising every essential function that is provided for by this bill. By a bureau of public health is understood not only a quarantine organization, but the establishment of a central bureau having control over general sanitation of towns and villages, with power to demand systems of sewerage, methods of disposal of garbage, water supply, house draining and plumbing, ventilation of dwellings, schoolhouses, and other public buildings, the examination of the milk supply, examination of food and of drugs, proper disposal of the dead, the enforcement of rules regarding disinfection of dwellings after the ordinary contagious diseases, such as scarlet fever, measles, and diphtheria, and other functions too numerous to mention, but all of which may be found set forth in the report of any State board of health or of the health department of any large city. It is the desire of some sanitarians that such a public health bureau should be established, but at present all these functions are performed under State or local law, and the right as well as the propriety of the General Government undertaking so exclusive and minute a field of operation, it is believed, would not be seriously considered by Congress at the present time, nor does the bill call for any such establishment, although its title would so indicate, and by reason of this title it may receive the indorsement of those who will not look carefully into its provisions.

Section 1 divides the United States into nine sanitary districts; but one State which has given greater impetus to scientific quarantine than any other is not included in any one of these districts—namely, the State of Louisiana—and is therefore debarred from representation.

Section 2 provides for a bureau of public health, to consist of a commission of fifteen, eleven of whom shall be appointed by the President, and when actually engaged in the performance of their duties shall be entitled to \$10 per diem and reasonable expenses.

Section 3 provides that the president of this commission shall receive \$5 per diem in addition to the \$10 per diem provided in section 2, and provides also for the appointment of a secretary at a salary of \$3,000 annually.

Section 4 provides for the executive committee of the commission. This executive committee is subject to all the rules and regulations made by the commission. In connection with section 4 should be read section 24, which provides "That in the

execution of all orders, etc., relating to sanitation in any branch of the public service, etc., the Surgeon-General of the Army shall perform all such duties in respect to the Army, the Surgeon-General of the Navy shall perform all such duties in respect to the Navy, and the Surgeon-General of the Marine-Hospital Service shall perform all such duties in respect to quarantine and quarantine regulations which are provided by this act." The Surgeon-General of the Army is hereby directed to perform certain sanitary duties in respect to the Army which are imposed upon him by a commission of fifteen members elected from different parts of the United States. I respectfully call attention to the possible confusion that might arise by imposing upon an officer of the Army the execution of rules and regulations for the Army made by a bureau of the Treasury Department. The same may be said with regard to the Navy.

As regards the execution of the quarantine rules by the Marine-Hospital Service, the same objection does not hold because it is a bureau of the Treasury Department. But in my opinion the Marine-Hospital Service will more intelligently and effectively execute quarantine regulations when prepared by itself than when made by a mixed commission of fifteen members. The supposed advantages to be derived from a commission of fifteen members are already possessed practically by the Treasury Department. Section 4 of the quarantine act of February 15, 1893, provides that "It shall be the duty of the Supervising Surgeon-General of the Marine-Hospital Service, under the direction of the Secretary of the Treasury, to perform all the duties in respect to quarantine and quarantine regulations which are provided for by this act."

Although the quarantine regulations are promulgated by the Secretary of the Treasury, their preparation, both by law and according to general custom in the Executive Departments with regard to such matters, is the duty of the Supervising Surgeon-General, and in the performance of this duty he has it within his power to call to his assistance whatever aid he may deem necessary. As illustrating this point I beg leave to transmit herewith Appendix A, being a statement showing the organization of the Marine-Hospital Service and its facilities both for the preparation of quarantine regulations and their execution.

Recurring again to the sections of the bill, and particularly to section 5, relating to conferences with State boards of health, etc., the provisions of this section are already met under the existing law, and in point of fact a conference of this nature was held between the State boards of health and the Surgeon-General of the Marine-Hospital Service in the city of New York after the passage of the quarantine law of February 15, 1893, and before the issue of the regulations thereunder.

Furthermore, a conference was called by the Surgeon-General of the Marine-Hospital Service in March, 1893, composed of some twenty leading State and local quarantine officers, for the consideration of quarantine measures, and remained in session two days in Washington.

From and including section 6 the remainder of the bill is practically a reenactment of the act of February 15, 1893.

The investigations contemplated by section 7 are possible under existing laws and appropriations, in accordance with which commissions have been appointed for special investigation, particularly into the nature, history, and means of prevention of yellow fever and cholera. A reference to the reports and publications of the Marine-Hospital Service will show detailed and elaborate accounts of epidemic diseases not to be found in other publications in the United States. During the past year a special commission of two officers, under the direction of the Surgeon-General, has made a most thorough investigation into the origin of choleraic outbreaks in foreign countries and the special means and routes by which this disease is conveyed through Europe to the ports having most intimate commercial relations with the United States.

I inclose for your information (Appendix B) a copy of the annual report of the Secretary of the Treasury, on pages 25 to 29 of which will be found a brief summary

of the operations of the Marine-Hospital Service under the quarantine law of February 15, 1893, during the season just ended, and also (Appendix C) a brief account of the measures taken by the Surgeon-General of the Marine-Hospital Service following the passage of this act, as set forth by him in an address before the American Medical Association in June last.

The following is an epitomized statement of the quarantine system as it now exists under the authority of the law of February 15, 1893:

Quarantine rules and regulations to be enforced in foreign ports, to be enforced on board of ships at sea, and to be enforced at the maritime ports of the United States have been prepared and promulgated. These quarantine rules and regulations must of necessity be subject to occasional modification, and may be promptly modified or added to as occasion demands under existing organization and without the intervention of a complex body of commissioners. There is a multiplication of authority and a division of responsibility in the proposed commission which would likely prove fatal.

As regards the quarantine ports of the United States, a uniform system of regulations has been devised, and to secure its enforcement a special regulation has been made, and with an affirmative opinion as to its legality by the Acting Attorney-General of the United States, which requires the Surgeon-General of the Marine-Hospital Service to cause an inspection to be made of all State and local quarantines for the purpose of securing an enforcement of the Treasury regulations. I am informed by the Surgeon-General of the Marine-Hospital Service that, in conformity with this regulation, the coast of the United States, from Maine to the State of Washington, has been divided into convenient sections, and an officer detailed to make frequent inspections of every port within his section. In this manner at least once each month, and in many places more frequently, every quarantine of the United States will be subject to a visit of inspection by the national authority.

In conclusion I have to state that the efficiency of the present quarantine system has been amply demonstrated during the past quarantine season, when this country was probably more seriously threatened with the invasion of epidemic disease than at any previous period, and in my opinion to make any radical change of organization is inadvisable.

In another communication, however, I shall submit for your consideration certain additions to the present law suggested by the experiences of the past season.

I have the honor to remain, very respectfully, yours,

W. E. CURTIS, *Acting Secretary.*

Hon. GEORGE D. WISE,

*Chairman Committee on Interstate and Foreign Commerce,*

*House of Representatives.*

In view of the public questions involved it is deemed appropriate to insert here the address delivered by myself before the Committee on Interstate and Foreign Commerce of the House of Representatives, by the special request of said committee, May 18, 1894, upon the merits of a bill (H. R. 7106) "to establish a bureau of public health within the Department of the Interior of the United States."

IN RE A PROPOSED BILL TO ESTABLISH A BUREAU OF PUBLIC HEALTH IN THE  
DEPARTMENT OF THE INTERIOR, ETC.

[Address before the Committee on Interstate and Foreign Commerce of the House of Representatives, May 18, 1894, by Walter Wyman, Surgeon-General Marine-Hospital Service.]

Mr. CHAIRMAN AND GENTLEMEN OF THE COMMITTEE: On March 28 you listened to a number of gentlemen distinguished in various specialties of medical science, who endeavored to make plain to you the great desire of the medical profession of

the United States for some legislative action looking to the prevention of the introduction of epidemic or contagious diseases into the United States, the suppression of contagious diseases within our borders, the diffusion of sanitary knowledge, the collection and utilization of mortuary and vital statistics, and encouragement of State and local health organizations. They presented a bill for consideration, through the operations of which they hope that this desire of the medical profession may be gratified.

I will in a few moments refer specially to the declared objects of this bill, and wish now to say that I am in hearty sympathy with the desires and sentiments of these gentlemen which were so intelligently placed before you. These very matters have formed the chief subject of my professional thoughts for a number of years, and I have long been a student of the problems which they involve, seeking a definite solution.

But I will come at once to the bill which they have presented as their solution of these problems, and I propose now to critically examine it with a view to determining whether it is a wise and practical measure.

In the discussion March 28 the academy committee seemed desirous of making it appear that the quarantine portion of the bill was not its greater portion, that the chief objects of the bill were outside of quarantine matters and related to the establishment of some central bureau of advice and information upon the general subjects just mentioned. Yet, as pointed out to them at the time by one of your number, nearly the whole bill relates to quarantine; in other words, twenty sections out of the total twenty-three refer to quarantine matters, the remaining three (18, 20, and 21) relating to reports to Congress, mail matter, postage, appointments and salaries of officers, and estimates of expenses. There was no suggestion that the enforcement of quarantine rules and regulations should be taken from the Marine-Hospital Service, which for so many years has been charged with this work, but the bill contemplates that the making of these rules and regulations shall be transferred to the new bureau of public health and the commissioners thereof. And when it was suggested that this was encroaching upon the administrative functions of the Marine-Hospital Service, and that it might be better to leave the making of the quarantine rules and regulations as now provided for, the gentlemen of the academy committee insisted that, inasmuch as quarantine rules and regulations are based upon scientific knowledge, it would not be compatible with the dignity and importance of this proposed new bureau to deprive it of this function.

As is known to you, under the present law the Surgeon-General of the Marine-Hospital Service is charged with all the duties pertaining to quarantine and quarantine regulations which are provided for in the act of February 15, 1893. The regulations must be approved and promulgated by the Secretary of the Treasury. To aid me in preparing these regulations I called a board of medical officers of the Marine-Hospital Service. This board consisted of an ex-Surgeon-General of the Marine-Hospital Service; a surgeon of the Service who had had charge for a long period of the quarantine division in the Bureau; a surgeon who had had practical experience in charge of quarantine stations, both in the North and in the South; another who was in charge of the medical department of the Immigration Service at the port of New York, giving him an insight into the character and the necessary precautions to be taken with regard to immigrants; and still another, who was a skilled bacteriologist, a specialist in biological diagnosis, and in charge of the scientific laboratory of the Service. These gentlemen, with suggestions from myself, framed the rules and regulations to be observed with regard to vessels, passengers, and cargo in foreign ports and on the voyage.

For the quarantine rules to be observed at ports of the United States a similar board was called together. All the State and local regulations had been previously examined, and you will remember that the law requires that if any such are found insufficient the Secretary of the Treasury shall make additional ones. It was evi-

dent there were some which were deficient, and a minimum standard was therefore determined upon, namely, a code of rules which should be required at every quarantine station in the United States. A uniform quarantine code for the maritime ports of the United States had long been the desire of quarantine and sanitary officers; for years it had been their chief complaint that no uniformity existed, and heretofore all efforts to this end, through conventions and otherwise, were futile. For the first time in the history of the United States such a code was prepared, adopted, and promulgated last season under the law of February 15, 1893.

After these rules and regulations for domestic quarantine had been prepared by the board I have just mentioned, and before the adjournment of this board, a conference was called by myself of the quarantine officers of the Atlantic and Gulf coasts, representing the cities and ports of Portland, Boston, Providence, New Haven, New York, New Jersey, Philadelphia, Wilmington, Del., Baltimore, Norfolk, Wilmington, N. C., Charleston, Savannah, Florida, Mobile, New Orleans, and Texas.

This conference was called to order March 16, and remained in session two days, the first day being devoted to a consideration of the rules which had been prepared, and discussion thereof, with the understanding that there would be no vote. The second day the rules were again read *seriatim*, discussed, and voted upon. After adjournment of the conference the board continued its labors, paying special attention to the views expressed in the conference. The rules thus perfected were then presented by myself to the Secretary of the Treasury, were promulgated by the latter April 4, and a letter inclosing them was sent to each maritime quarantine officer, calling attention to the law and to the fact that these were minimum requirements, and requesting an expression of willingness and ability to execute them, to which satisfactory responses were received.

Now, for the enforcement of these rules for domestic quarantines the following additional regulation was promulgated by the Secretary of the Treasury, after its legality had been passed upon by the Attorney-General of the United States. The regulation and the instructions in accordance therewith have been issued in the following form:

INSTRUCTIONS TO MEDICAL OFFICERS OF THE MARINE-HOSPITAL SERVICE DETAILED  
TO MAKE INSPECTIONS OF STATE AND LOCAL QUARANTINES.

TREASURY REGULATIONS.

\* \* \* \* \*

In the performance of the duties imposed upon him by the act of February 15, 1893, the Supervising Surgeon-General of the Marine-Hospital Service shall, from time to time, personally, or through a duly detailed officer of the Marine-Hospital Service, inspect the maritime quarantines of the United States, State and local, as well as national, for the purpose of ascertaining whether the quarantine regulations prescribed by the Secretary of the Treasury have been or are being complied with. The Supervising Surgeon-General, or the officer detailed by him as inspector, shall at his discretion visit any incoming vessel, or any vessel detained in quarantine, and all portions of the quarantine establishment for the above-named purpose and with a view to certifying, if need be, that the regulations have been or are being enforced.

J. G. CARLISLE, *Secretary*.

GENERAL INSTRUCTIONS.

- A. Your inspections will include all ports within your district where vessels are allowed to enter and discharge cargo and ports which may be used as ports of call.
- B. A separate report will be made of each station visited.
- C. Visit every part of the quarantine establishment and take necessary precautions to prevent the conveyance of contagious or infectious disease through the medium of your own person.



D. Visit the custom-house for the purpose of ascertaining whether the regulations with regard to bills of health and quarantine certificates are being observed; also the immigration station for any pertinent information.

E. Reports of a statistical character and descriptive of the quarantine, called for herein, need be made but once in every six months, namely, on the date nearest the 1st of January and the date nearest the 1st of July; but any changes that have been made since the last general report should be immediately recorded.

In making your report you will follow the special instructions in their order, referring to each by number.

#### SPECIAL INSTRUCTIONS.

1. Describe the quarantine station, location, buildings, anchorages, etc. Give limits of anchorage for noninfected and for infected vessels, facilities for inspection of vessels, apparatus for disinfection of vessels and of baggage, facilities for removal and treatment of the sick and for the removal and detention of suspects, mail and telegraph facilities, etc.

2. Give personnel of the station or port, name of the quarantine officer or officers, post-office address, total number of officers and subordinates, etc.

3. Transmit copies of the laws under which the local quarantine is maintained and copies of the quarantine regulations, and describe the quarantine customs of the port as they are carried out.

NOTE.—There are sometimes slight, but possibly important, variations from the letter of the local regulations in the administration of quarantine. Also local regulations generally allow a wide latitude to the quarantine officer, and how this latitude is used, i. e., how the quarantine officer interprets the spirit of the regulations, is very important.

4. State what quarantine procedures, either under printed regulations or by custom, are enforced at the port, in addition to the requirements of the Treasury Department. It should also be stated whether there is undue or unnecessary detention or disinfection of vessels.

5. State whether the inspection is maintained throughout the year or for what period, and what treatment of vessels is enforced during the entire year.

NOTE.—Many ports on the South Atlantic Coast (e. g., Charleston, Savannah, and Fernandina) require certain ballasts to be discharged in quarantine without regard to season.

6. Are vessels from other United States ports inspected?

7. Describe quarantine procedures in the inspection of vessels, and, if infected, the treatment. Give time in quarantine (a) between arrival and commencement of disinfection, (b) time occupied by disinfection, and (c) time after completion of disinfection of vessels until discharge.

NOTE.—Quick or slow handling of a vessel is of more importance commercially than the question of fees. The time lost is the vessel's heaviest expense, generally.

8. What communication is held with vessels in quarantine (and before quarantine by pilots, etc.) and how regulated? Is there any intercommunication allowed among vessels in quarantine?

9. State what will be done with a vessel infected with cholera; second, a vessel infected with yellow fever; third, a vessel infected with smallpox (said vessel carrying or not carrying immigrants), and what conditions are regarded as giving evidence of the vessel's infection in each case.

10. State whether records are kept at the station of the cases of disease that have occurred during the voyage, on arrival, and during detention.

11. Transmit schedule of quarantine fees, and give other fees and expenses necessarily and usually attendant on quarantine, as tonnage, ballast, wharfage charges, etc.

12. Make a statement showing the number of vessels arriving at the port during the preceding calendar year, by months (a) from foreign ports; (b) from foreign ports in yellow fever latitudes via domestic ports; (c) from domestic ports. Show

also the character of the commerce carried on by the port, i. e., from what countries chiefly the vessels come, and whether in cargo, ballast, or empty.

13. State results of your visit to (a) the custom-house; (b) the immigration bureau.

14. State whether in your opinion the quarantine facilities are sufficient to care for the shipping entering the port.

15. Name the quarantine regulations of the Treasury Department which are not properly enforced, and state specifically whether the regulations regarding inspection and disinfection, and particularly the period of observation after disinfection, of vessels are observed.

16. Mention any facts which in your opinion should be known to the Department, bearing directly or indirectly upon the quarantine service, and make such recommendations as seem proper.

WALTER WYMAN,

*Supervising Surgeon-General Marine-Hospital Service.*

NOTE.—Report to be written on legal cap paper (on one side only), signed, and inclosed in this blank as a cover.

In conformity with this regulation and the printed instructions, all the quarantines of the United States from Maine to the State of Washington are subject to periodical inspection under the supervision of the Marine-Hospital Bureau. In accordance with this regulation, also, an inspection was maintained at the New York quarantine the greater part of last season, both to render such aid as might be given and to insist upon the enforcement of the Treasury regulations.

I submit that this method, above described, of making quarantine regulations, prepared, as they were, by men of scientific attainments, familiar with actual working details at quarantine stations, familiar with all matters pertaining to immigrants and, too, with the complicated machinery of governmental methods and associated services in Washington, is superior to that suggested in the proposed bill, namely, by a commissioner of public health in the Interior Department, with an advisory council of forty-four members (one from each State of the Union), unacquainted with one another, and unfamiliar with governmental methods and existing branches of the Executive Departments. Or, if the advisory council is not to assist in making these regulations, which seems a matter of doubt under the terms of this proposed law, then I submit that the method so successfully adopted is a more practical way of framing regulations than to intrust them to one man alone, namely, the commissioner of health, an officer of the Interior Department, to be executed by the Secretary of the Treasury or the President.

There are no more experienced men in both the theoretical and practical workings of quarantine than are to be found in the medical corps of the Marine-Hospital Service. There are scientific investigations being constantly made in the laboratory of the Service, which is as well supplied with every modern apparatus or instrument as perhaps any laboratory in the United States. These investigations relate principally to the cause, nature, life history, and prevention of epidemic diseases; and it may be added that instruction is given in this laboratory both to the officers of the Service and to local quarantine officers in biological diagnosis of contagious diseases.

In framing regulations, the Marine-Hospital Bureau, besides its own scientific and practical officers, has the assistance of the law officer of the Treasury Department, detailed from the Department of Justice, and the benefit of the counsel and advice of the heads of the several divisions in the Treasury Department conversant with all the executive and legal details which might require consideration, and finally of the Assistant Secretary and the Secretary of the Treasury himself. It is difficult to conceive of any question connected with quarantine regulations which can not be decided properly and promptly by the Marine-Hospital Service and the Treasury Department, to which it belongs.

Now, hand in hand with the making of quarantine rules goes their execution. I contend that they can be best executed when emanating from the same body or service that is charged with their practical application. In the proposed scheme of having one Department make the rules and another execute them, I can readily see the possibilities of clash, the shifting of responsibility from one to the other, and crimination and recrimination after the resultant disaster.

Moreover, speaking for the Marine-Hospital Service, to have an outsider make the rules and command us to enforce them would deprive the corps of its esprit, than which nothing is more essential for effective service. It is this esprit du corps that has gained for the Service its successes in the past.

I will not here dwell upon, but simply refer to, the alacrity with which the members of this corps have sprung to their posts of danger when ordered, submitting themselves to all kinds of exposure and privations in their efforts to speedily check the spread of epidemic disease, and facing a death which has come to a number of its officers.

The proposed law would make the Marine-Hospital Corps simply a hewer of wood and a drawer of water, with all the responsibility—the terrible responsibility—of a successful enforcement; while the commissioner of public health in the Interior Department might simply from his office declare what should be done, leaving further responsibility to the Marine-Hospital Bureau and its officers. Such a status would inevitably destroy the enthusiasm of our officers, an enthusiasm which is felt, not only for the character of the work they are doing, but for the peculiar service which they themselves by their own efforts have made illustrious, and in which they feel a peculiar pride.

There is another consideration which shows that the proposed arrangement is impracticable. Certain difficulties might suddenly arise with regard to the enforcement of quarantine regulations, which might require prompt amendment or additions thereto, and for the executive force to then be obliged to await the decision of an officer in another Department would cause delay that might be fatal. For example, as matters now stand, if the Surgeon-General is informed that certain quarantine regulations are insufficient, and a new regulation is immediately necessary, he may prepare the same without waiting to explain its necessity and convince the commissioner of public health thereof. Every epidemic is apt to produce new conditions and to demand some variation in suppressive measures, and during the past season instances of this kind actually occurred.

Finally, I have to state that the quarantine season is now upon us. Amended rules and regulations have been prepared and are before you. Cholera has been reported in Belgium, Portugal, and France. The return of it is expected in Italy and Germany. It has been in Russia and Constantinople all winter, and in Tripoli and other places. To disturb the present efficient organization at any time is unnecessary, and to adopt new procedures now would likely be hazardous.

It is now necessary to consider this matter from a departmental and more general standpoint. The bill proposes to establish in the Department of the Interior, and under the direction and supervision of the Secretary thereof, a national bureau of public health, which with its commissioner and possibly its advisory council, is to make rules and regulations for maritime quarantine.

Now, maritime quarantine, as its name implies, relates to commerce, to vessels and crews, and has intimate relations with the shipping laws, the customs service, immigrant inspection, etc., all of which are regulated by the Treasury Department. What propriety there could be in the Department of the Interior having charge of quarantine with these surrounding conditions it is difficult to conceive. This bill would impose upon the Secretary of the Interior an entirely new kind of work, and would make his Department lap over or extend into the Treasury Department. In his efforts to carry out this law the Secretary of the Interior would find himself surrounded on all sides by the various branches of the Treasury Department, into whose

jurisdiction he would be constantly intruding. A vessel arrives at quarantine; the customs inspectors are interested in that vessel as well as the quarantine officers. The Revenue-Cutter Service may be interested in that vessel for violating the navigation laws. The Immigration Service is very much interested because it carries immigrants, and so is the Bureau of Navigation, which looks after the fines and penalties.

The Inspection Service of Steam Vessels looks to the personnel of the pilots, and, if the vessel is of American registry, has supervision of the boilers, air space, ventilation, etc., and the Marine-Hospital Service cares for the sick and disabled among the crew. Now, these are all Treasury bureaus or divisions, and it sometimes happens that in the exercise of their various functions, with regard to this vessel, the different bureaus of the Treasury Department may have some misunderstanding. Customs authorities have claimed right of precedence over quarantine authorities in boarding vessels. Immigrant inspectors have claimed the same. There are certain precautions to be taken by the customs inspectors when a vessel is in quarantine. How necessary, therefore, for all to be under one head. There would be unavoidable clash and maladministration, with two heads of large departments of the Government attempting to manage subtle affairs upon a big ocean vessel arriving at an American seaport.

The very terms of the bill show its incongruity, for while it calls for the establishment of this bureau within the Interior Department, under the direction and supervision thereof, in several sections of the bill (3, 9, and 10), the Secretary of the Treasury is directed to perform certain functions.

Moreover, section 17 provides that the commissioner of public health, without previous assent from the head of a Department, may request of the President a detail of officers from the several offices of the Government for temporary duty, to act under the direction of said bureau, to carry out the provisions of this act, thus giving the commissioner the power to strip any service of its active force or agents, despite other need for the same.

Coming now to the additional expenses incurred by the proposed establishment of this bureau, it will be seen (section 1) that there is to be a president with \$6,000 per annum, an advisory council of one from each State, who shall be entitled to actual traveling expenses and \$5 per diem for subsistence while engaged in the performance of their duties; and these duties are to consult with the commissioner of public health at the annual or at special meetings.

Section 20 provides for the appointment of 6 sanitary inspectors, at \$1,800 per annum, making \$10,800 per annum; a chief clerk, at \$1,800; 1 clerk of class 3, at \$1,600; 1 clerk of class 2, at \$1,400, and 6 clerks, at \$1,000 per annum; 1 messenger, at \$840, and 1 watchman, at \$720 per annum; making a total of \$30,560 per annum for salaries in this Bureau.

I beg leave now to refer, as I stated that I should do at the beginning of my address, more specifically to the declared objects of the bill, irrespective of quarantine proper. These objects are practically the same as were mentioned in the first bill presented by the academy committee, and to which the honorable the Secretary of the Treasury objected, and from whose letter to your chairman, of January 3, I quote as follows:

"The bill does not establish a bureau of public health as that term is generally understood, or, if it does, then a bureau of public health already practically exists in the Marine-Hospital Service, which is now exercising every essential function that is provided for by this bill. By a bureau of public health is understood not only a quarantine organization, but the establishment of a central bureau having control over general sanitation of towns and villages, with power to demand systems of sewerage, methods of disposal of garbage, water supply; house draining and plumbing; ventilation of dwellings, schoolhouses, and other public buildings; the examination of the milk supply; examination of food and of drugs; proper disposal of the dead; the enforcement of rules regarding disinfection of dwellings after the ordinarily

contagious diseases, such as scarlet fever, measles, and diphtheria, and other functions too numerous to mention, but all of which may be found set forth in the report of any State board of health or of the health department of any large city. It is the desire of some sanitarians that such a public-health bureau should be established, but at present all these functions are performed under State or local law, and the right, as well as the propriety, of the General Government undertaking so exclusive and minute a field of operation, it is believed, would not be seriously considered by Congress at the present time. Nor does the bill call for any such establishment, although its title would so indicate, and by reason of this title it may receive the indorsement of those who will not look carefully into its provisions."

Now, from a careful perusal of this new bill, and from the remarks made by the gentlemen on March 28, it appears that, quarantine aside, what is desired and hoped to be achieved through the instrumentality of the bill is as follows, namely:

Collection of information regarding prevalence of contagious and epidemic diseases in this and other countries.

Publication of information thus obtained in a weekly bulletin.

Collection and utilization of mortuary and vital statistics.

Uniformity of system in registration of births, marriages, and deaths.

Suppression of contagious diseases within our own borders.

Diffusion of sanitary knowledge.

Encouragement of State and local health organizations.

Investigation by experimental and other methods of the causes and means of prevention of disease.

Advice and information to be given to the several departments of the Government and executives and health authorities of the several States on such questions as may be submitted by them.

It will be seen that, summarized, the above objects may be stated to be gaining and spreading of information and giving advice.

Now, there are two considerations to be taken into account with regard to these desired objects: One is, How much can be done under the peculiar construction of our Government—in other words, under the Constitution of the United States; the other is, How much is being done by State governments and existing branches of the General Government.

In the addresses which were delivered before you on Wednesday the desires of sanitarians and of medical men were forcibly expressed, just as though all these desires might as well be gratified as not. But there are limitations to the exercise of health prerogatives by the National Government, and these limitations find their corresponding privileges in the rights and constitutions of the several States. It is impossible for us to be guided by precedents set by foreign Governments, monarchical and even despotic in character. An attempt on the part of the National Government to interfere in domestic sanitation, to enforce laws regarding plumbing, drainage, light, heat, and ventilation of public buildings, the placarding of houses containing contagious disease, or imposing restraints upon the inhabitants thereof, would meet with violent and legally authorized opposition on the part of the citizens of the several States and municipalities. Nor does this bill contemplate such action on the part of the Government. While Congress may legislate to advance the interests of science, still the executive rights which the Government has in sanitary matters are derived chiefly from the clause of the Constitution giving Congress the power to regulate commerce; and in regulating commerce it has the right to strip it of its disease-bearing agencies. Moreover, even if the right of minute surveillance existed, no example worthy of imitation can be taken from any foreign Government whose physical conditions so materially differ from our own.

As stated in an address which lies before you, even—

"History furnishes no models for the construction of any sanitary institution adapted to the wants of this nation. Lycurgus, with his Spartan laws, adapted to

a small and peculiar province, the laws of Moses, the quarantine laws of the fifteenth century—none of these furnish a sanitary framework for the United States. What nation has such conditions of boundary and magnitude as our own? What can England, with its Government on a 'tight little isle,' and its possessions scattered over the earth, what can a nation with such physical conditions teach us? What can France, or Spain, each with a territory surpassed by a single one of the United States, teach us? Or Germany, with scarcely any seaboard at all? What conditions prevail in Russia, Italy, or Turkey, that prevail here?

"We may adopt scientific appliances, we may study technique in foreign lands and observe the application of sanitary principles, but we must be a law entirely unto ourselves with regard to our sanitary policy."

We must study, too, our national organization, and work out a sanitary system in harmony with it—

"Broadly stated, this sanitary policy expects of each State a sanitary autonomy whose influence should be appreciated by every individual in every hamlet, however small in its domain. It contemplates a State pride in the development of sanitation, a self-reliance, and an unwillingness to surrender functions or call for aid from the General Government excepting after clearest convictions of propriety or necessity."

As we look to the State for the development of its own educational system, so must we look to the State for the education of its people in the establishment of sanitary surroundings and in the matter of personal prophylaxis. In point of fact, the growth of State and municipal health organizations within the last ten years has been remarkable. Of the 44 States, 38 have now State boards of health.

Before you are the annual health reports of several States—Massachusetts, Pennsylvania, New York, and New Jersey. These are but samples, but within their covers you will find laws, regulations, statistical information, the results of scientific investigation into the causes of disease, articles upon plumbing, sewerage, water supply, heat, the ventilation of schoolhouses; in short, all the matters affecting the public health. Now, under the proposed bill of health the National Government would only be advisory to these State boards. The bill does not specify the use of any executive force on the part of the General Government with regard to matters contained within these State health reports. Yet, as though to bring the United States into unfortunate contrast with England, one of the speakers on March 28 referred to the superior sanitary organization of the latter country and the great advances made through the agency of the local government board. This local government board, however, has more than advisory rights, and would never have achieved its success if its powers from the start had been limited to advice.

Much has recently been said regarding internal sanitation and internal quarantine, and the necessity of suppressing the ordinary contagious diseases (diphtheria, typhoid fever, tuberculosis, et.c.), irrespective of the great epidemic diseases, cholera, yellow fever, and smallpox; and in the bill under consideration it is provided (section 12):

"That the commissioner of public health shall, under the direction of the Secretary of the Interior, cooperate with and aid State and municipal health authorities in the execution and enforcement of the rules and regulations of such authorities, and in the execution and enforcement of the rules and regulations made by the commissioner of public health and approved by the President of the United States, to prevent the introduction of contagious or infectious diseases into the United States from foreign countries, and into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia."

The above is presented as though it were a new provision of law, whereas a like provision already exists in section 3 of the act approved February 15, 1893.

Under this act regulations have been made, promulgated, and executed, under the direction of the Secretary of the Treasury, to prevent the spread of yellow fever from one State to another, and other regulations have been prepared to prevent the spread of other contagious or infectious diseases.

As to internal sanitation the proposed bill nowhere provides for it specifically.

Yet the need of internal sanitation has been dwelt upon as though the General Government could undertake it and as though this bill provides that it should.

There is one clause of the bill which, if passed, might be so construed as to give the proposed bureau local and even domiciliary supervision, namely, the clause in section 1 which states that "this bureau shall, in general, be the agent of the General Government in taking such action as will most effectually protect and promote the health of the people of the United States." This clause, with a liberal interpretation, gives so wide, and at the same time so minute a power, that, as I am advised, it would prove not only repugnant to State authorities and conflict with State laws, but the functions which might be attempted under it would be unconstitutional. I quote, as stating in a general way the views I have heard expressed by a number of eminent men on this subject, some of them Members of Congress, an editorial in the New York Times of August 2, 1893:

"The sanitary condition of cities and towns and the control of the influences which affect the health of the people are matters that come very distinctly within the police power of the States. Regulations and restrictions for the protection of the public health can be best established and administered by State and local authorities, and the nearer their administration comes to the people affected the better. The subject may be neglected in some States, or they may be slow in appreciating its importance and providing for the sanitary well-being of their people, but that fact does not impair their authority or transfer it elsewhere. They may be dilatory or negligent in many things that the National Government can not look after for them.

"When it comes to dealing with contagious diseases brought from other countries the matter takes a different aspect. The enforcement of measures for preventing their introduction at our seaports or over our borders necessarily involves interference with foreign commerce. Vessels have to be detained, inspected, and disinfected, and passengers and merchandise have to be subject to regulations that concern the people and the interests of the country regardless of State lines. National jurisdiction has here an appropriate field and is alone adequate to its requirements. Quarantine regulations affecting communication with foreign countries should be national and national only. The same principle may apply in some degree to protection against the transmission of infectious diseases from one State to another through the agencies employed in interstate traffic, as interference with those agencies pertains to the regulation of commerce between the several States. But there is seldom any occasion for interference in the case of infections originating in this country.

"There might be a useful function for a national board of health in the collection and diffusion of statistics and information relating to matters that concern the public health, and in consulting and advising with State and local authorities. But no power or jurisdiction could be exercised by such a board, by whatever name it might be called, over those authorities, and it could in no way deal practically with internal sanitation."

Coming now to the second matter for consideration, namely, how much is being done by existing branches of the Government service, for the purpose of saving time I would refer to the pamphlet before you, entitled "Government Aids to Public Health," which, however, does not contain an exhaustive statement.

Concerning the collection of information regarding the prevalence of contagious and epidemic diseases in this and other countries, and the publication of the information thus obtained in a weekly bulletin, you have before you a bound volume of such weekly bulletins for the year ending December 31, 1893. This volume, published by the Marine-Hospital Bureau, contains, first, domestic information, viz, abstracts of the reports of States and municipalities, special reports concerning contagious diseases, mortuary reports from the different cities of the United States,

reports concerning immigration, and reports from the Department of Agriculture, showing the temperature and rainfall in the various cities from which mortality reports are received; second, foreign information, received through the State Department and from officers of the Marine-Hospital Service stationed abroad, relating to like subjects.

Concerning the experimental investigation into the causes of disease, I have to state that such experiments are going on constantly in the laboratory of the Marine-Hospital Service, and that special commissions, either under present laws or by special resolution of Congress, may be appointed at any time for this purpose. I have here a volume prepared by Dr. Shakespeare, who was specially commissioned by the President to visit Europe and India and prepare a report upon the prevalence, history, and origin of cholera. His expenses were paid from the "epidemic fund," and without special legislation.

I will further state that, under the auspices of this Bureau, during the past year, a commission consisting of Surgeon Irwin, of the Marine-Hospital Service, and Dr. Walter Kempster, an expert, visited all portions of Europe, as well as Egypt and Palestine, in further investigation of the prevalence of cholera, its method of introduction into Europe, and the special sources of danger to the United States through the importation of merchandise from infected countries.

P. A. Surg. J. J. Kinyoun was detailed, in 1890, to visit Berlin and Paris for the purpose of investigating and familiarizing himself with the methods of the distinguished Professors Koch and Pasteur.

Other experts have been employed by the Treasury Department and sent to points of danger, and their expenses paid out of the "epidemic fund." The inspections made by them have embraced the cities of Central America and Mexico.

The annual reports of the Marine-Hospital Service contain numerous articles upon the cause, life history, and prevention of contagious diseases, and in further illustration of the scientific work of the Bureau I would invite your attention to the report of the present House Committee on Ventilation and Acoustics, just published, containing the results of a scientific examination of the air of the House of Representatives for the detection of impurities therein deleterious to health, made by an expert officer of the Marine-Hospital Service.

There remains, therefore, of the avowed purposes of the bill to be mentioned only statistics regarding marriages, births, and deaths. The Census Bureau furnishes much of this information, though, it is admitted, not as frequently as could be desired.

I by no means mention the above facts for the purpose of asserting that all is being done that is desired, but simply to show the committee what is being done, and that with some extension of present organization and facilities much more could be done without breaking up existing institutions, without disturbing organizations that have reached their present degree of efficiency because founded on the necessities of the Government, and because year by year they have been strengthened and improved by intelligent administration and Congressional action.

A few words now regarding the organization and scope of the Marine-Hospital Service.

#### MEDICAL CORPS.

The medical corps of the Marine-Hospital Service, as will be seen by the small blue book before you, consists of a supervising surgeon-general, 16 surgeons, 26 passed assistant surgeons, 19 assistant surgeons, and 93 acting assistant surgeons, making a total of 154. The regular corps, that is to say, all of the above excepting the acting assistant surgeons, are appointed by the President after thorough physical and professional examination. The acting assistant surgeons are appointed by the Secretary of the Treasury, on recommendation of the Supervising Surgeon-General, who satisfies himself as to the professional qualifications of the officer. The employment of acting assistant surgeons in times of emergency for temporary



service, and the discontinuance of their services when the emergency is over, furnishes an excellent method of increasing or contracting the medical corps as occasion requires.

The acting assistant surgeons are men who have been long in the Service and are trained in Government routine. When newly appointed in emergency they are usually assigned to a marine hospital under the observation of the commanding officer and one of the older assistants, detailed to meet the emergency.

I have heard that intimations have been made concerning the youth and inexperience of the members of the regular corps, the absurdity of which is shown by a table which I have caused to be prepared giving the age and date of graduation of every officer of the Service. From this table it will be seen that the average age of the 16 surgeons is 50 years, the average age of the 26 passed assistant surgeons is 35 years, and of the 19 assistant surgeons, 29 years.

The medical colleges represented are as follows:

- Medical College of Maine.
- Western Reserve Medical College.
- Jefferson Medical College, Philadelphia.
- Pennsylvania Medical College.
- Chicago Medical College.
- Rush Medical College.
- University of Georgetown, District of Columbia.
- University of Michigan.
- Columbian College, Washington, D. C.
- Bellevue Hospital Medical College, New York.
- National Medical College, Washington, D. C.
- University of Pennsylvania.
- University of Maryland.
- College of Physicians and Surgeons, New York.
- College of Physicians and Surgeons, Baltimore.
- College of Physicians and Surgeons, Boston.
- Dartmouth Medical College, New Hampshire.
- McGill College, Montreal, Canada.
- Harvard Medical School, Boston.
- Howard University, Washington, D. C.
- Medical College of South Carolina.
- Virginia Medical College.
- University of Virginia.
- Miami Medical School, Cincinnati.
- Long Island Medical College, New York.
- St. Louis Medical College.

It will thus be seen that the members of this corps are fairly representative of the medical profession of the country. Many of them, in spite of the fact that they are subject to change of station every four years or oftener, have held and are now holding professorships in the medical colleges of the cities in which they are stationed.

Concerning the new admissions to the corps, the law requires that they shall be appointed to the grade of assistant surgeon only, and provision is made for subsequent promotion. The examination is held once or twice a year, as occasion requires, and the applicant must pass a very severe test, making an average of 80 per cent on all branches. The successful candidates are relatively few. For example, this month, out of 29 who appeared for examination, only 4 made the required grade. These new appointees represent the very best men among the newer graduates of the colleges; but very rarely do they come direct from the medical college, most of them having had hospital or private practice before seeking admission to the corps. Out of the total 61 medical officers, 53 had hospital practice before entering

the Service, 7 were engaged in private practice, and only 2 had neither private nor hospital practice.

There are 19 hospitals owned and operated by the Service, and 95 additional relief stations, where at contract hospitals seamen are admitted and treated by acting assistant surgeons.

#### DISTRIBUTION AND QUALIFICATIONS OF THE CORPS.

The officers of the medical corps, just mentioned, are stationed in every important port on the coast, lakes, and rivers, and being trained in the execution of Government business, become valuable agents for the immediate execution of any sanitary measures which may be imposed upon them by telegraph or otherwise from the Bureau. It is always possible for the Marine-Hospital Service, in any part of the country, on the shortest notice, to have qualified agents at a place of danger. There is scarcely an officer of the regular corps who has not had actual quarantine experience, and the corps numbers among its members men whose names have become national by reason of their effective service in various epidemics. The corps embraces a number of skilled bacteriologists, also men who have had large practical experience in the treatment of yellow fever and other contagious diseases, men thoroughly acquainted with all the military duties connected with sanitary cordons, detention camps, and with the methods of train and vessel inspections, scientific disinfection, etc. The effectiveness of this corps is the result of special care exercised to secure within it men who, by natural inclination and special education, are fitted for sanitary work, and is also the result of long and active experience.

The Marine-Hospital Service dates as far back as 1798. It was reorganized and put upon its present basis in 1871. Though established for the purpose of caring for sick and disabled seamen of the merchant marine of the United States, there have been from time to time other responsibilities imposed upon it, growing out of the necessities of other branches of the Government with which it is intimately and necessarily associated. For example, the Revenue-Marine Service, a branch of the Treasury Department, relies upon the Marine-Hospital Service for the physical examination of its officers and men and their professional treatment when sick or disabled. The Life-Saving Service relies upon the Marine-Hospital Service for the physical examination of the keepers and surfmen. Hundreds of rejections of physically unsound men seeking to become surfmen have been made by the officers of the Marine-Hospital Service. The Steamboat-Inspection Service, a most important branch of the Treasury, relies upon the medical officers of the Marine-Hospital Service for a determination as to the ability of the pilots to distinguish signal lights, and large numbers of applicants for pilots' license are annually rejected by the officers of this service on account of color-blindness. The Immigration Bureau relies by law upon the Marine-Hospital Service for the medical inspection of immigrants.

Naturally, too, by reason of the intimate association of the Marine-Hospital Service, through its sailors, with shipping and commerce, the National Government has imposed upon this Service the execution of the national quarantine laws, to which reference has already been made. I will only add here that so far as national quarantine is concerned, the Service, by tradition and constant activity, save for a period of four years, is the natural executor of the same. National quarantine received its first executive impulse through the first Surgeon-General of the Marine-Hospital Service, Dr. John M. Woodworth, in 1878. Both prior and subsequent to this last date the Bureau has controlled, wholly or in part, epidemics of yellow fever and of smallpox; notably, yellow fever in 1873, 1876, 1877, 1878, 1882, 1887, 1888, and in 1893, the Brunswick epidemic, when it was confined within the cordon on lines established by the Service.

It also took charge of railroad quarantine against smallpox in Canada in 1885, and at Harris Neck, Ga., in 1891, it stamped out the disease.

It had complete control of the quarantine measures against yellow fever in Texas in 1882, and in Florida in 1888.

## THE NATIONAL QUARANTINE STATIONS.

The Marine-Hospital Service has under its immediate control ten national quarantine stations, equipped with modern appliances for disinfection of vessels, hospitals for the care of the sick, and barracks, where required, for the detention of suspected immigrants.\* These stations are so far remote from populous centers as to be seldom visited, but their completeness and the scientific care exercised in isolation of the sick, the surveillance of those suspected and held under observation, the cleansing and disinfection of vessels, has excited the surprise and commendation of the few Members of Congress who have visited one or more of said stations. There is a fleet of thirteen vessels connected with these stations, three of them being old vessels turned over from the Navy for the purpose of receiving and housing people in quarantine.

## COOPERATIVE ASSOCIATIONS.

Now, referring to the work done by the Marine-Hospital Service for other branches of the Government—namely, the Revenue-Marine Service, the Life-Saving Service, Steamboat-Inspection Service, and Immigration Service—a return service on the part of these branches of the Government adds to the strength and ability of the Marine-Hospital Service for quarantine work. For example, the Revenue-Cutter Service, under the same Secretary as is the Marine-Hospital Service, may be called upon at any time, and frequently is, to assist in quarantine measures through the medium of their fleet of vessels. During the past summer revenue cutters have patrolled the Southern coast in aid of the quarantine cordon around Brunswick. They have carried medical officers and supplies to the Sea Islands, off the coast of South Carolina, in the sanitary work demanded of the Marine-Hospital Service by reason of the great storm. They have furnished vessels for the Marine-Hospital Service repeatedly in New York Harbor, and, in fact, practically form a fleet subject to demand for service at any time in the aid of quarantine. During the past summer, when it was feared that the immigrant detention camps at Camp Low and at Delaware Breakwater, both under the control of the Marine-Hospital Service, might of necessity be occupied by immigrants held under observation, an arrangement was made with the Revenue-Marine Service for the immediate detail of their enlisted and armed men from the several cutters, to form the necessary guards around these camps, the places of the enlisted men to be supplied by new enlistments on the vessels.

The Steamboat-Inspection Service, in return for the examination of pilots, furnishes experts to examine the hulls, boilers, and machinery of the vessels which belong to the Marine-Hospital Service.

The Life-Saving Service, on request of the Supervising Surgeon-General of the Marine-Hospital Service, is required by its superintendent to watch carefully for all dunnage and other stuff that might float ashore from infected vessels, thrown overboard before said vessels reach port; to gather up with rakes such material and burn it.

The presence of medical officers at the immigration reception stations at the several ports enables the Bureau to keep fully informed with regard to immigrants and their baggage, which constitute so large a proportion of the danger in the matter of epidemic importation.

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\*These stations are located at Delaware Breakwater; Reedy Island, Delaware River; Cape Charles, Virginia; Blackbeard Island, Sapelo Sound, Georgia; Brunswick, Ga.; Dry Tortugas, Fla.; Ship Island, Gulf of Mexico, off the coast of Mississippi; San Diego, Cal.; Angel Island, San Francisco Bay, California; Port Townsend, Wash.

## OPERATIONS OF MARINE-HOSPITAL SERVICE.

The operations of the Marine-Hospital Service, independent of quarantine, during the fiscal year ended June 30, 1893, may be summarized as follows: Total number of sailors treated in the hospitals and dispensaries; 53,317, of which number 14,857 were treated in hospital, the remainder being office or dispensary patients. There were 1,353 pilots examined for color-blindness, of which 48 were rejected. One thousand and ninety-five surfmen and keepers of the Life-Saving Service were examined, of which number 41 were rejected for physical causes. Two hundred and seventy-nine seamen of the Revenue-Marine Service were examined before shipment as to their physical fitness, and 22 were rejected.

With regard to funds, the quarantine service is maintained by a yearly appropriation for the ordinary maintenance of the ten national quarantine stations. In addition to this there is what is known as the "epidemic fund," which is placed at the disposal of the President, to be used under his direction in any manner he sees fit, to prevent the introduction and spread of epidemic diseases. It is from this fund that the expenses of the foreign quarantine and extraordinary precautionary measures in this country have been paid.

The Marine-Hospital establishment, independent of quarantine, is maintained by a continuing fund derived from the tax on foreign tonnage.

In conclusion, referring again to the proposed bill to establish a bureau of public health in the Interior Department, etc., which bill, I learn, was on the 16th instant introduced in the House, and is now House bill 7106, I beg leave to invite your attention to the letter of the Acting Secretary of the Treasury, dated May 17, stating the objections thereto on the part of the Treasury Department. The bill seems to ignore existing statutes, and effects but little change other than the establishment of a new bureau. Quoting from the Secretary's letter:

"The bill in question is largely a reenactment of the act of February 15, 1893, as will be seen by a comparison of their respective provisions."

In closing this report I have to acknowledge the assistance of the medical officers detailed for duty in charge of the several divisions of the Marine-Hospital Bureau and the faithful and efficient services of the clerical force. One-half of the total number of marine hospitals and United States quarantine stations are illustrated herein. It is proposed to illustrate the remaining hospitals and stations in the report for 1895.

I have the honor to remain, very respectfully, yours,

WALTER WYMAN,  
*Supervising Surgeon-General United States Marine-Hospital Service.*



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